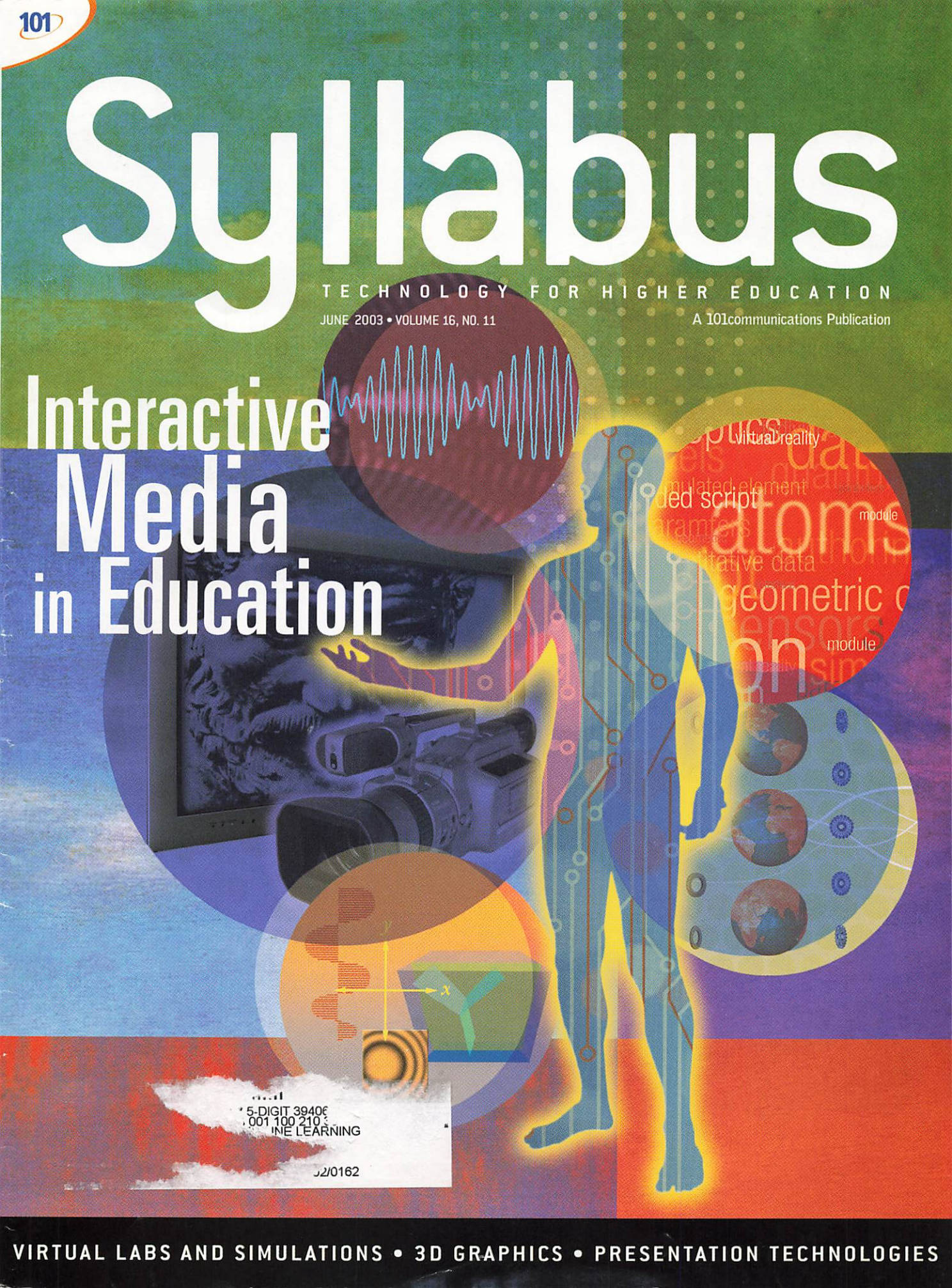
Syllabus

TECHNOLOGY FOR HIGHER EDUCATION

JUNE 2003 • VOLUME 16, NO. 11

A 101communications Publication

Interactive Media in Education



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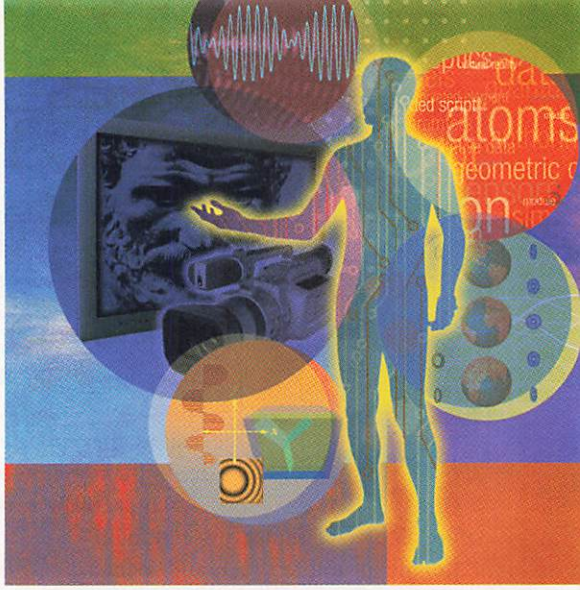

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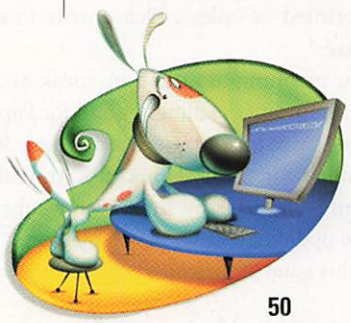

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EDITOR'S NOTE

Mary Grush, Editor

Virtual labs and simulations, 3D graphics, visualizations—you'll find a host of interactive media applications in higher education. It's true that new media technologies allow instructors to boost learning by combining text, graphics, audio, video, and animation in engaging ways. But the best examples are more than complex illustrations or attractive packaging of a salient point or two. Instead, they model dynamic, real-world processes for which more than one outcome is possible, so students may more closely learn by experience. In this issue, we'll explore the nature of interactive media in education.

Despite the impressive, brand-spanking newness of our interactive media applications, the underlying principles of how we interact with these technologies are perhaps not so new after all. In our lead feature interview (page 22), Human Computer Interaction (HCI) researcher, author, and lecturer Brenda Laurel reaches back 2,500 years for some insight, drawing on her knowledge of Aristotle to explain her theory of *Computers as Theatre*. Robert Cavalier, of Carnegie Mellon University's philosophy department, queries Dr. Laurel about the implications for higher education.

A stunning example of interactivity, and one that can be extended to other disciplines, is LAAPhysics (page 26). With the aid of a FIPSE grant, UNC-Greensboro developers are creating an online virtual laboratory environment for physics education along with tools that will eventually be used as an affordable development platform by educators in both the sciences and humanities. And in an update on interactive, real-time 3D graphics (page 30), Marty Plumbo, of the University of Cincinnati College of DAAP, School of Design, explains how this maturing technology is now within reach for serious education applications.

Sharing the wealth of interactive media resources and learning content objects will be an essential step if these assets are to be generally available. MERLOT executive director Gerry Hanley explains how the peer-reviewed content resource will be there to help (page 36).

With new interactive media playing a larger role in the classroom and lecture hall, effective delivery of instruction is a key concern. An expanded product roundup, beginning on page 37, examines the latest presentation technology. For more articles about interactive media in education, be sure to visit *Syllabus* online.

I'd like to hear from you about your reactions to these or any of our other articles, whether printed or online. Please write to me at mgrush@syllabus.com. I may publish your message!

Are you planning to attend or speak at a Syllabus conference this year? Remember these two important deadlines: A Call for Papers is now active for the fall2003 Boston-area conference—submissions are due by June 30 (see page 46). And don't forget, the Early Bird Deadline for the Syllabus2003 Annual Summer Conference (see page 15) is fast approaching—register by June 27 for substantial savings. For more information and conference updates, visit www.syllabus.com.

Enjoy this issue of *Syllabus*!

Mary Grush

Letters to the editor should be addressed to the editor and sent to 101 First Street, #605, Los Altos, CA 94022, or via electronic mail (mgrush@syllabus.com). We reserve the right to edit all submissions. **News and product information** will be considered for publication. Please send all materials to Paul McCloskey. If you are interested in writing for *Syllabus*, please send a brief description of your article idea along with writing samples to the editor at the above address.

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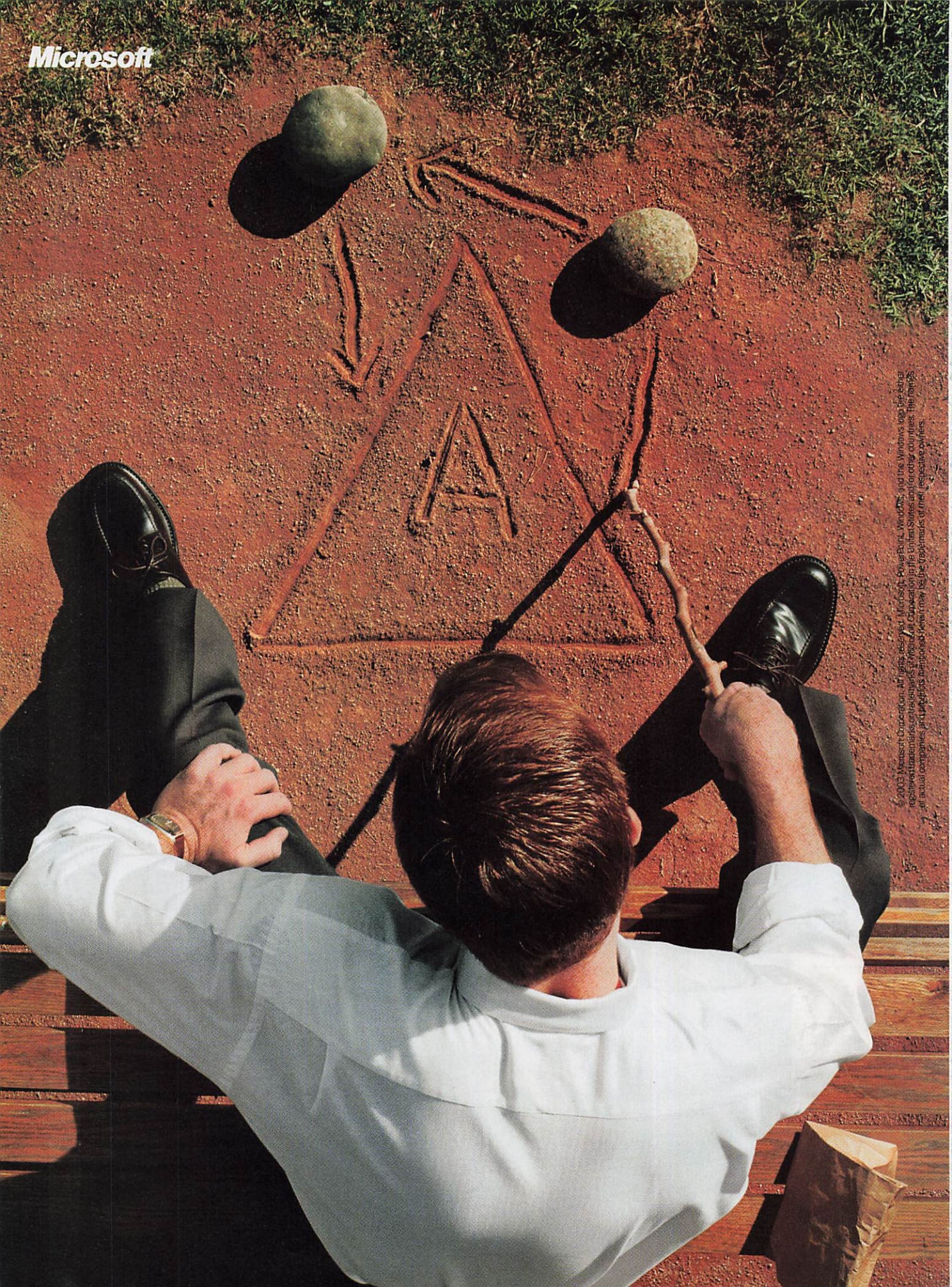

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Phillip D. Long

TRENDS

AN INFORMATION RESOURCE OF INTEREST TO EDUCATORS

"Spam, Spam, ... Lovely Spam."

The signal-to-noise ratio of e-mail is rapidly declining. Spam has become the No. 1 scourge of our inbox. Sadly, it's getting harder and harder to distinguish spam from just plain, unsolicited junk. Nicolas Graham, the spokesperson for America Online, called spam the cold virus of the Internet. "It's going to exist in some form or another, like taxes or bad weather." As in any arms race, the sophistication of the aggressor—those generating spam—is in a tightly choreographed dance with those striving to save us from the onslaught, the spam filtering and legislative proposals to limit their distribution. There are multiple threads to this problem: technical, cultural, political, and legal.

Besides the implacable meat-based foodstuff, what is spam? The state of California has a definition that is nicely summarized by FindLaw (www.findlaw.com). Spam can be defined as "unsolicited e-mail documents," that is, "any e-mailed document or documents consisting of advertising material for the lease, sale, rental, gift offer, or other disposition of any realty, goods, services, or extension of credit when the documents (a) are addressed to recipients who do not have existing business or personal relationships with the initiator and (b) were not sent at the request of or with the consent of the recipient." (Section 17538.4, subd. (e))

To combat the rising tide of spam software companies have developed a variety of software tools to divert spam from landing in your inbox. The approaches taken tend to fall into the following general categories:

- Content scanners
- Distributed notification systems
- Customized or manual blocking systems
- Real-time blackhole lists (RBLs)

Content scanners: These are mechanisms that examine the individual message to determine if it meets specific criteria that are typical of spam. Software of this sort can be installed on a user's computer or on the receiving e-mail gateway of ISPs. There is much to like about this approach because at least the software installed on the user's PC leaves the final decision of what is or is not spam within their control. But this comes at a price. Examining the content of every e-mail that arrives is resource intensive. Content scanners are using increasingly complex analytic techniques from heuristic analysis to Bayesian inference.

Content Scanners

SpamAssassin: http://spamassassin.org
PureMessage: www.activestate.com
Brightmail: www.brightmail.com
McAfee: www.mcafee.com
Cloudmark: www.cloudmark.com

Distributed notification systems: Like content scanners, these systems look at every message. However, once a message is determined to be spam, the leverage of a community is invoked. The user reports the spam message analysis to a centralized database that is checked by other users of the system. Other users can check the centralized spam database to see if their message matches anything in the repository and treat a matching message as spam.

Distributed notification systems begin to move the locus of control from the individual user to some external agency. In doing so, there is a collective leveraging of the filtering power, but a corresponding loss of control. Should messages you want to receive end up classified as spam by others using the system, they become spam to your system and are correspondingly blocked. Getting your preference for what you want to receive, as mail versus spam, is now a negotiation with a third party.

BRIEFS

- Administrative software giant **SAP** will begin marketing a student administration system, SAP Campus Management, in the United States.
- Satellite broadband services supplier **SkyFrames** teamed up with **CompUSA** to deliver eLearning content through North America.
- This fall 2003 **USC School of Engineering** will offer a master's of science degree in computer science with a specialization in security.
- **The University of Illinois** plans to integrate administrative computing systems at its three lead campuses—Chicago, Springfield, and Champaign-Urbana—in a $197 million project.
- **Dartmouth College** standardized on a "location-based" wireless network designed to push content to students based on their location on campus.

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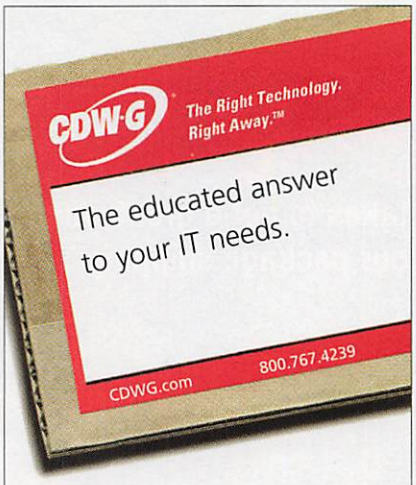

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Customized or manual blocking systems: These are often implemented by the mail administrator of your e-mail system. Typically they do textual analysis of incoming mail and if words or phrases like "Nigerian royalty" appear in the message, they are discarded before they reach your mail client. Alternately, the e-mail administrator may have their own list of frequent sources of spam and simply implement a rule to block anything originating from such sources.

Unfortunately, this approach requires constant attention, generating new rules and modifying the old ones to keep up with the continuing message morphing engaged in by the spammers.

Real-time blackhole lists (RBLs): Sometimes good ideas have a way of turning around and biting back. RBLs tend to exhibit this characteristic. In the early days e-mail administrators noticed that a disproportionate amount of spam seemed to originate from common network addresses. As they began using manual blocking systems to protect their users from the onslaught of junk mail, they shared what they were learning with their fellow e-mail administrators. Common lists of network addresses from which spam originated had something else in common: They often came from sources that were open relays. An open relay is a mail server that is configured to relay messages sent to it on to their destination addresses. However, if a spammer encounters a mail server configured this way, he or she can send volumes of e-mail messages on to their destinations through the open relay, making it appear that the source of the message was the open relay itself.

RBLs check the source of e-mail sent to see if the source allows them to send a message through unchecked in this fashion. If it does, they conclude the source is an open relay and block e-mail coming to them from this address. As a consequence, e-mail administrators began to close down their mail relays by instituting rules that are applied to messages that ask to be forwarded on. For example, they may require that the originating address be one that is from a list that the mail administrator trusts, such as that of their own college or business. Any other message asking to be relayed will be dumped into the proverbial bit bucket.

This sounds terrific, except if your message really isn't spam. How might that happen? Once the idea developed to begin collecting the lists of open relays to use them as a check by local e-mail filtering rules to reject incoming messages that were from network addresses that

continued on page 49

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GENERAL SPAM REFERENCES

Fight Spam on the Internet: http://spam.abuse.net

Spam Conference, Jan. 17, 2003, at MIT: http://spamconference.org

Spam Laws: www.spamlaws.com

Spam: How to Fight It—Elsop's Anti-Spam Page: www.elsop.com/wrc/nospam.htm

RECENT SPAM ARTICLES

Death to Spam: A Guide to Dealing with Unwanted E-Mail
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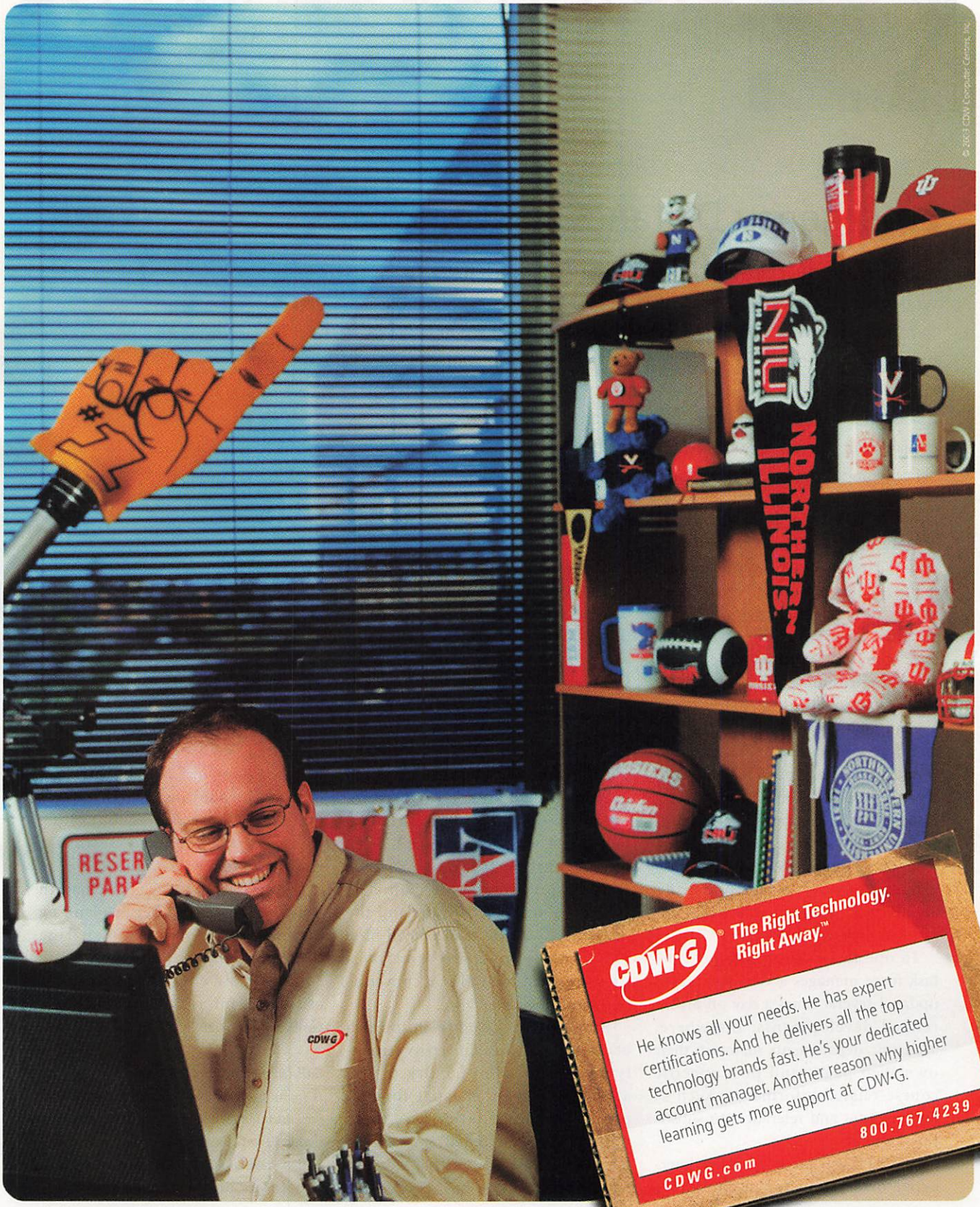
> **2:56 pm.** With his extensive tech training, CDW·G account manager Chris Clark supports higher learning every way he can.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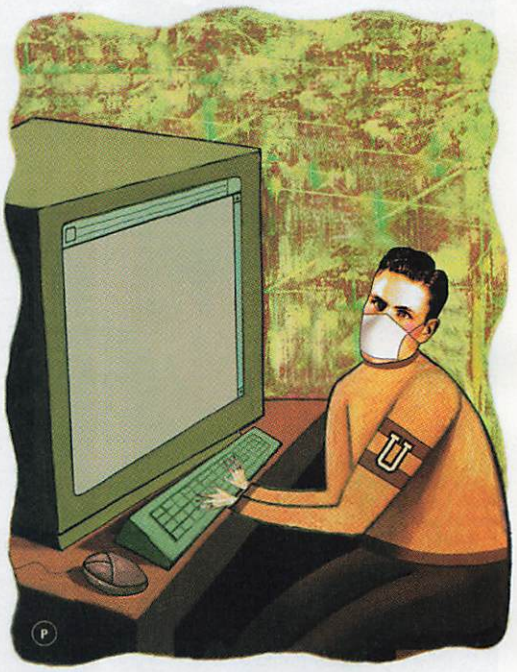

In late May I had planned to be in Hong Kong to help run a workshop on international institutional eLearning collaborations, but the workshop was postponed due to the SARS epidemic. While planning the workshop, I became electronically acquainted with several very skilled and creative educators in Hong Kong. Through our online discussions I learned about some of the ways they are dealing with the fallout of the SARS epidemic, which has closed the schools and discouraged large public gatherings.

How do you keep your university community going under these conditions? How do you help students maintain their progress toward their academic goals? Besides requiring surgical masks to be worn by everyone on campus, the overwhelming response was to incorporate what we think of as distance learning solutions.

Before I outline some of those solutions, it is important to acknowledge that the Chinese University of Hong Kong (CUHK) is a traditional institution in every sense. Faculty members focus on their research and usually meet with students face-to-face. Essentially, all members of the university community had to change overnight.

In one instance, an instructional task force manages a Web site that is updated several times a day on SARS-related developments. Elsewhere, academic departments maintain their own Web pages and post specific course-related information such as lecture notes and references to substitute for lectures.

Several classes are using online interactive discussions for teaching. For example, in the medical school a plastic surgery class has stopped meeting on campus. Instead, students access an Internet site of images in one window and a chat room in another. The class is run similar to the way it always was, with students taking turns to identify features of images and discuss treatments.

The university's Writing Across the Curriculum project is another example of the shift to distance learning. There are instructors who work with campuses in all disciplines to support writing in English. They quickly shifted from face-to-face consultations to using e-mail. The students e-mail their drafts and the instructors send back annotated files. These interactions are sometimes supplemented with phone conversations when needed.

Another critical shift is in the area of assessments. The university strongly encouraged the faculty to use alternatives to the usual formal, proctored examinations. A large number have switched this school term to using extra written work or take-home exams.

As CUHK's Dr. Carmel McNaught put it, "All this is evidence that technology is now a mainstream tool that can be rapidly mobilized." It may seem that way to her, but I wonder how many of our North American campuses would be able to react as quickly as those throughout Hong Kong should we face a similar emergency in the near future.

While this is not what we had in mind when we first began planning our workshop, perhaps in sharing their challenges, our Hong Kong colleagues are engaging in the most critical of international collaborations in distance learning.

Sally Johnstone (sjohnstone@wiche.edu) *is founding director of the Western Cooperative for Educational Telecommunications (WCET) and serves on advisory groups for state, national, and international organizations to help plan and evaluate eLearning projects.*

Illustrated by Peter Bennett

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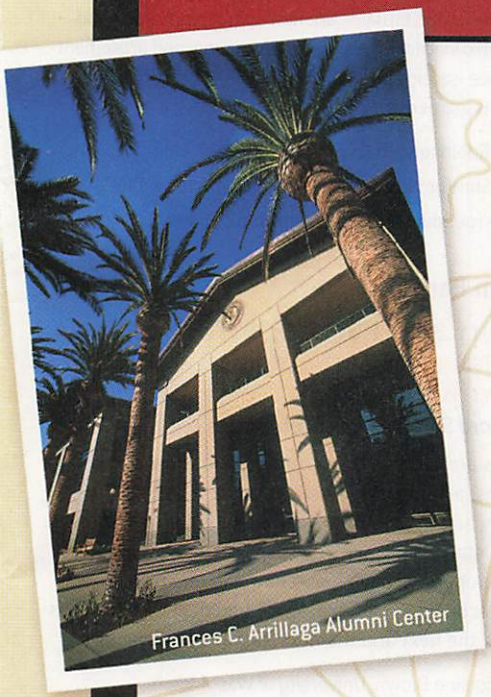

July 27-31 • San Jose Marriott • Stanford University

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Examine new and emerging technologies and applications that impact the development and delivery of education.

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Featured General Sessions

Stanford Featured Speaker

Monday, July 28 • 10:45 – 11:45am

Choices and Challenges: Lessons Learned in the Evolution of Online Education

Andy DiPaolo, Ed.D. — Executive Director, Stanford Center for Professional Development (SCPD) & Sr. Associate Dean, School of Engineering, Stanford University

Dr. Andy DiPaolo will discuss the rise of a new online education industry and the lessons learned by educational institutions and corporations involved in networked learning. He will draw on his work in leading the SCPD, one of the largest university distance education organizations in the country, as well as his role as a consultant to universities, government organizations and corporations involved in distributed learning. His presentation will offer the results of Stanford University's studies on the marketplace forces of graduate and professional education and how traditional universities as well as education entrepreneurs have crafted innovative programs and practices to meet the needs of changing student populations.

Stanford Panel

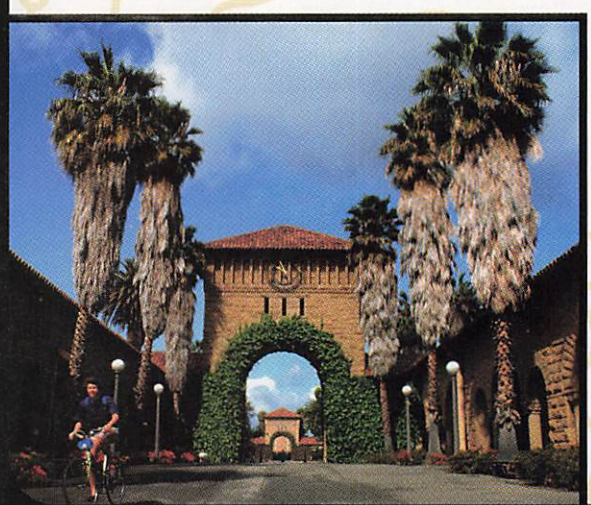
Monday, July 28 • 4:15 – 5:30pm

Innovative Learning Spaces — A New Frontier?

*Moderated by **Phillip D. Long, Ph.D.** – Senior Strategist, Academic Computing Enterprise, MIT*

Innovation in technology and architecture presents new learning opportunities for faculty and students. But it also presents challenges for developing effective teaching models and evaluating the effectiveness of our efforts. Join this panel of experts as they discuss new educational and assessment models, along with how to make the most of a high-tech space. Hosted in Stanford's newly renovated Wallenberg Hall, participants will experience the technology as Stanford students do — real time as part of the learning experience.

Panelists: David Brown, Wake Forest University ■ Bob Smith, Stanford University



General Session Panel

Tuesday, July 29 • 4:30 – 5:30pm

Pedagogical and Fiscal Planning for Successful Distance Learning Programs

*Moderated by **William H. Riffee, Ph.D.** – Associate Provost for Distance, Continuing and Executive Education, University of Florida*

The amount of competition currently taking place in higher education with respect to distance education necessitates a comprehensive planning approach allowing for flexibility, modularization, and the opportunity to generate revenue. Institutions are now considering both good pedagogy and economic viability in planning, developing, and implementing successful distance learning programs. Panelists will share policies, processes and lessons learned at their institutions.

Panelists: Evan T. Robinson, Ph.D., Shenandoah University ■ Andy DiPaolo, Ph.D., Stanford University ■ Sally Johnstone, Ph.D., Western Cooperative for Educational Telecommunications

General Session Panel

Wednesday, July 30 • 4:30 – 5:30pm

Waiting for Disruptive Technologies? How to Deal with Change

*Moderated by **Howard Strauss** — Princeton University*

All new technologies are potentially disruptive, and while you can't avoid the disruptions, planning for them can make a great difference. Most IT groups are not set up to deal with change and some are in fact quite resistant to change. How can you make staff and administration more open to change, and how can you make room for change in your technology plans? How do you deal with the next strange thing — and the next and the next — that comes along?

Panelists: Jacqueline Brown, University of Washington ■ Phillip D. Long, Ph.D., MIT ■ Charles Kerns, Stanford University

General Session Panel

Thursday, July 31 • 11:15am – 12:30pm

Technology in Education —Past, Present, and Future

*Moderated by **Judith V. Boettcher, Ph.D.** — Designing for Learning*

Join the members of the Syllabus Conference Board for reflections and visions of how technology in higher education is impacting teaching and learning, our systems and our infrastructures. This panel will weave the many themes of the conference into reflections and summaries that you can share with your colleagues, and project visions for the future.

Panelists & Syllabus Board Members: Lois Brooks, Stanford University ■ Jacqueline Brown, University of Washington ■ Kathy Christoph, University of Wisconsin-Madison ■ Phillip D. Long, Ph.D., MIT ■ William H. Riffee, Ph.D., University of Florida ■ Frank Tansey, CaliforniaColleges.edu

10th Annual Education Technology Conference and Exposition

Syllabus 2003

Keynote Speakers

Opening Keynote

Monday, July 28 • 8:30 – 9:30am

High Performance Learning Environments: Dreams and Developments

Roy Pea, Ph.D. *– Professor of Education and Learning Sciences Director, Stanford Center for Innovations in Learning (SCIL), Stanford University*

Uses of computing in higher education and K-12 alike should become increasingly guided by advances in the sciences of learning and by continuous improvement cycles that aim to establish "high performance learning environments." While much emphasis in e-learning has elaborated uses of networks to support distance learning, we also must focus on the values of enhancing place-based learning using collaborative computing and large displays for knowledge building, as well as embedded "take-the-pulse" assessment activities embedded in learning work. In these ways we can leverage networking technologies inside the classroom to transform the work practices of learning and teaching. Dr. Pea will describe Stanford University's experiences at Stanford's Wallenberg Hall *(<http://wallenberg.stanford.edu/)* and elsewhere in making progress on these issues.

Tuesday Keynote

Tuesday, July 29 • 8:30 – 9:45am

The Virtue of Disorder: Sloppiness, Serendipity, and Openness in Educational Materials

James Boyle *– William Neal Reynolds Professor of Law, Duke University Law School*

Recent debates about the proper role and extent of intellectual property in education and educational materials have been both intense and heated. Faculty members, university administrators, students and entrepreneurs have disagreed with each other and, frequently, with themselves about ownership, control, incentives, and access. Much of the debate has taken an economic form and technology has added a new level of complexity. How can we best provide the highest quality materials at the lowest price? James Boyle will argue that we are on the tipping point between two very different economic and technical systems for the delivery of intellectual content and two very different communications architectures. Each system will come to seem "rational" if we take a few steps towards it and each has plausible arguments in favor of it. In picking between the two, Boyle claims, our choice should be guided by an unlikely set of values for educators: the virtues of ignorance, disorder, and sheer fortuitous chance.

Wednesday Keynote

Wednesday, July 30 • 8:30 – 9:45am

Integrative Design: Revisioning Educational Infrastructure

Brenda Laurel, Ph.D. *– Chair, Media Design Program, Art Center College of Design*

Faculty and students routinely find technological infrastructures to be inadequate, inaccessible, or irrelevant. Educators often think of technology and curricula as separate goals: all want better technological infrastructure and all want more effective curricula. But as long as these two goals are approached in isolation, the larger strategic goal of improving the quality of higher education is unlikely to be achieved. Dr. Laurel will present her work in integrative design—a strategy that considers both technological and curricular development as tools that must be employed in concert. She will illustrate tactics that support this strategy—project-based and research-intensive course definitions—showing how connections among students, between students and faculty, across disciplines, and between the academy and the community may be enhanced.

Thursday Keynote

Thursday, July 31 • 8:30 – 9:45am

Command, Control & Curriculum

Kenneth C. Green *– Visiting Scholar, The Claremont Graduate University and Director, Campus Computing Project*

Twenty years into the so-called "computer revolution in higher education," the campus community still struggles with the role of information technology in the curriculum. Why? Drawing on data from The Campus Computing Project and other sources, Casey Green's presentation will review academe's experience with technology, focusing on the diffusion of innovation and information technology in teaching, learning, and scholarship.

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Gold (All 5 days)	☐ $795	☐ $995
Silver (Mon-Thur)	☐ $645	☐ $795
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Group 5 Pak* (Mon-Thurs)	☐ $2,750	☐ $3,500
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*Sunday Workshop can be added for $100 per person

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STEP 3 Demographic Questions

Please tell us where you work:

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How did you hear about Syllabus2003?

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STEP 4 Send in Your Registration

MAIL registration with full payment to: Syllabus2003, 1277 University of Oregon, Eugene, OR 97403-1277 or, if you use a credit card, FAX your registration to: 1.541.346.3545.

You may also register ONLINE through our secure Web site at www.syllabus.com/summer2003.

If you would like to use a Purchase Order to register, please contact Dena Fisher, Conference Services Coordinator at 1.800.280.6218 or 1.541.346.3537 to make arrangements.

STEP 5 Select Your Sessions Online

After receiving your confirmation code, you may go to the registration page at www.syllabus.com/summer2003/ and enter your code. Then select the conference breakout sessions that you are interested in attending. This will help us in planning logistics, however, it is not binding nor required.

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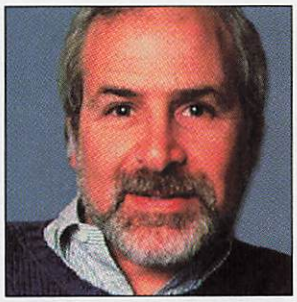
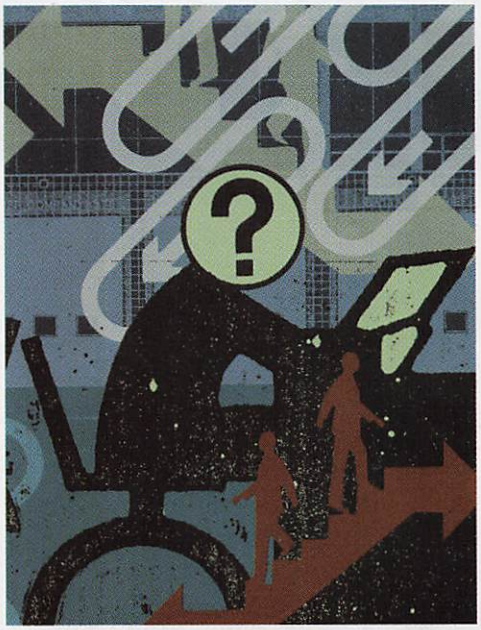


Kenneth C. Green

DIGITAL TWEED

Striving to Do More with Less, Again



June 2003: **As we enter month 30 of the current (Bush II)** recession and the last month of the 2003 fiscal year, many American colleges are behaving a lot like many American families. Across the land, families at their kitchen tables and campus officials in their offices and conference rooms are, in the words of the popular Christmas song, "making lists and checking them twice."

Let the politicians argue over who is naughty or nice in the current fiscal drama playing out in Washington and in state capitals. Elsewhere in the real world of declining dollars and hard budget deadlines, individuals and institutions are again engaged in a level of personal and programmatic triage that we have not seen since the last recession in the early 1990s (Bush I), or before that, the (Reagan) recession of the early 1980s.

Money is tight; future funding is uncertain, especially for public institutions. Hard decisions and tough choices lie ahead. Sure the campus community has been here before, but memories are short, while uncertainty, fear, and hyperbole are all high.

Money Cycles

This year there will be little or no budget dust for new computers and other IT goodies. Each office up the bureaucratic food chain has been carefully monitoring the money lying fallow since August, October, or January. There's a good chance that someone above you—a department chair, dean, or vice president—has been circling (coveting!) your budget and has plans to use your unspent funds to support other projects or to cover deficits in other programs and departments.

These money cycles seem almost biblical: six or seven years of plenty, followed by three-to-five years of significant financial problems. For those who work in (or like me, watch) IT in higher education, the triage-inflicted choices made during the down times are particularly difficult, often coming down to people vs. program vs. product decisions—who/which/what do we cut in the current crunch?

Consumer Expectations

People costs represent the largest proportion of total spending (including IT expenditures) across higher education. Additionally, large portions of higher education's IT product expenditures are really core operational costs: replacement computers and servers, network upgrades, software licenses.

The usually reliable buckets of new money available at the beginning of the fiscal year may not be there come July. Yet even as data from The Campus Computing Survey indicate that tech budgets are down, expectations about the technology infrastructure continue to rise.

Consider wireless networks. One catalyst for the explosive growth in wireless involves consumers who venture out each weekend to purchase inexpensive Wi-Fi routers and network cards.

For the growing number of homes with broadband, the in-house competition for the one, "crappy-copper" connection to AOL or an ISP has been replaced by "multi-user WiFi" that even mere mortals over age 40 can install in an hour or two. Consequently, many institutions now confront new expectations regarding network access from students, faculty, and administrators, prompted by their at-home experience with wireless.

And while Wi-Fi is moving quickly across the campus (and corporate) community, it may not be moving fast enough to meet these rising expectations.

The consumer experience also drives expectations for campus services on the Web.

For a growing number of students, ages 18 to 68, expectations about the range and quality of institutional services available on campus Web sites are based on their consumer experiences at Amazon, Abercrombie & Fitch, Charles Schwab, The Gap, Lands' End, travel services, banks, cell-phone providers, and, for some, AARP.

So even as data from The Campus Computing Survey indicate that the number of campuses offering online registration, course reserves, journals, fee-payment, and related academic resources and administrative services has doubled or even tripled over the past few years, the overall level of campus services on the Web often falls far short of the daily consumer experience elsewhere in cyberspace.

Consequently, as we begin Summer 2003, the campus community continues to confront growing demand for IT resources and services—rising expectations about infrastructure. These initiatives—wireless, services on the Web, and others—all cost money: real dollars, multiyear investments. Concurrently, we are also experiencing continuing uncertainty over financial resources for all of higher education, not just money for IT budgets.

Doing More with Less

Which brings us back to the mantra of many college presidents during the last recession: "doing more with less, and doing it better."

While "doing more with less" makes for a great sound bite, it does not play well on campus. Moreover, in the realm of IT initiatives, investments, and infrastructure, the campus experience of the past two decades should provide fairly compelling evidence that the textbook notions that link technology and productivity do not necessarily play out in academe, particularly on the instructional side of campus operations.

Is it too optimistic, too naïve, to suggest that "this too shall pass"? Past experience suggests that we should begin to see a financial recovery in the next year or two, and with it, money coming back into institutional budgets, including IT.

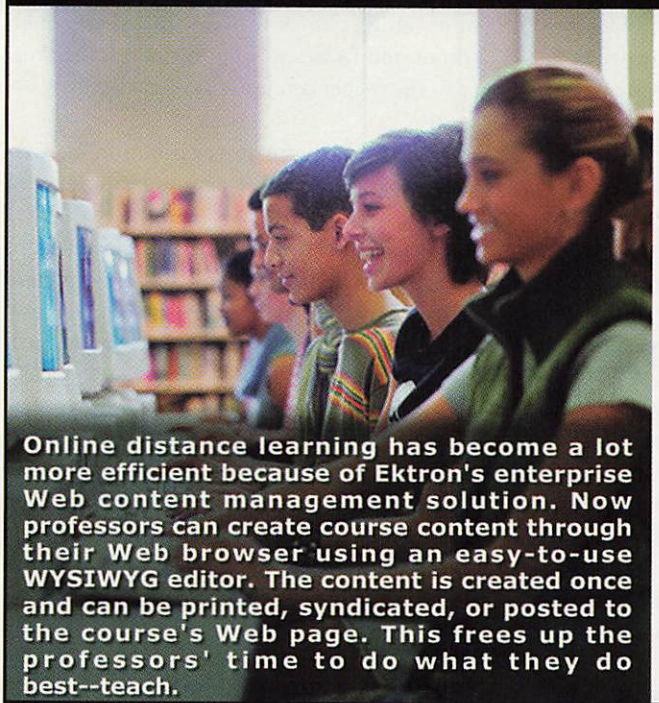
But colleges and universities will find it hard to serve today's students and their rising expectations for IT infrastructure and services with the promise of better budgets tomorrow.

As we have in good times and bad, people in the campus community "strive do more ... and do it better." Money just happens to make it a little easier to do so.

[*Editor's note: Casey Green will give a keynote, "Command, Control, and Curriculum," on Thurs., July 31, at Syllabus 2003.*]

Casey Green (cgreen@campuscomputing.net), the founding director of The Campus Computing Project (www.campuscomputing.net), is also a visiting scholar at The Claremont Graduate University.

Ektron Success Story #1216



Online distance learning has become a lot more efficient because of Ektron's enterprise Web content management solution. Now professors can create course content through their Web browser using an easy-to-use WYSIWYG editor. The content is created once and can be printed, syndicated, or posted to the course's Web page. This frees up the professors' time to do what they do best--teach.

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INTERACTIONS IN EDUCATION

A CONVERSATION WITH BRENDA LAUREL

Known for her research in Human Computer Interaction (HCI), books and publications including *Computers as Theatre* and *The Art of Human-Computer Interface Design*, and position as chair of the Media Design Program at the Art Center College of Design, Brenda Laurel has written and spoken widely about interactive media and the cultural implications of technology. Here, *Syllabus* magazine advisory board member Robert Cavalier interviews Dr. Laurel about her perceptions of HCI in higher education environments.

Robert Cavalier: I'm a fan of your work. Among other things, I teach a course in multimedia production at Carnegie Mellon—not a skill development course, but more of an opportunity to reflect upon what it all means. And when I try to find a conceptual framework for multimedia production, your work is really helpful.

Brenda Laurel: That's great to hear.

RC: I've always been fascinated by the way you use Aristotle's Poetics to reinterpret Human Computer Interaction [HCI]. When did you first notice the relevancy of Aristotle's work to HCI?

BL: Back in the mid-70s, I was in a pretty unique position to see the obvious, as most of the people working in my field in those early days were coming from a computer science background, and I was coming from theater. As an actor, I played early text adventure games, and that was parallel to performing a role in the theater, even though we were only working in text. So, I already had some intuitive knowledge of the link between theater and computers. Then in 1976 I started designing and programming video games to work myself through school, and I was studying Aristotle at the time. I saw the deeper connections immediately.

RC: What was the main contribution of Aristotle's writings to your own understanding of HCI?

BL: Specifically, it was Aristotle's definition of theater as a representation of action where characters are seen as patterns of choice—that's almost exactly what we have in a computer game.

RC: When did you begin to refer to this connection as "computers as theatre," which eventually became the title of your book?

BL: My advisor at Ohio State in the mid-to-late-70s supported my ideas, even though the CS department, at the time, thought I was nuts. I actually had to find a reader from Stanford for

BY ROBERT CAVALIER,
CARNEGIE MELLON UNIVERSITY

Illustrated by Richard Turletaub

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my dissertation. But it was ten years later, in 1986, about the time I was wrapping up the dissertation, that Don Norman, who you may know as an interface guru, helped me see that my work on theatrical theory, along with my knowledge of computer games, could be more broadly applied to HCI in general. So I did some writing for him that expanded into *Computers as Theatre.*

RC: What would you say is the core principle of Human Computer Interaction?

BL: It's all about just one central inversion. We've usually thought of computers as environments for humans. But when you turn that around and see the human as the environment for the computer, all of the HCI principles that I believe in come into focus. That is, primarily, that the computer should be tasked with supporting and conforming to the person's needs and constraints, and not the other way around.

RC: Can you describe one or two programs in higher education that exemplify this principle of HCI?

BL: Oh sure. At Ohio State, the Advanced Computing Center for Arts and Design—that's ACCAD, which is part of the College of the Arts—is conducting several interesting explorations about how technology can be designed to serve artists. For example, they've built a motion capture laboratory that allows actors to create animated characters that can appear in real time, alongside live actors in theatrical performances. They premiered the first work of this type, called *Sleep Deprivation Chamber,* in May.

RC: Then is the success of the motion capture lab based on the notion that the animated characters conform well to the actions of the live characters?

BL: Yes. Another model that comes to mind is at Carleton College in Northfield, Minnesota. Their IT department has a structure that they call "Discipline-Focused Technology." Individual academic computing coordinators are assigned to support specific academic disciplines. These folks are specialists in IT and also have academic backgrounds in the curricular areas they support. They act as outreach or missionaries, if you will, for technology. Carleton's experience has really demonstrated, I think, that this approach fosters curriculum innovation, and they've proven that IT professionals can be successful collaborators with educators in the disciplines, creating new possibilities for teaching and learning, and new curriculum. And the students there are trained in HCI and the use of computer tools through the lenses of their particular discipline, so they graduate with knowledge that's both targeted to what they want to do, as well as being generalizable to other areas.

RC: So IT professionals with backgrounds in particular discipline-specific areas can help determine how technology can serve departmental interests. What about cross-disciplinary applications of technology?

BL: At Art Center, where I teach, we're doing a couple of things that I think are really germane to this conversation. One is a growing emphasis on what we're calling trans-disciplinary studios. These are project-based, collaborative studios that involve at least two or more academic departments, and digital media is almost always one of the parties. We've created collaborations with fine art, film, environmental studies, transportation design, and so on, that have been really successful. In fact, until a couple of years ago, we had an undergraduate major at Art Center in digital media, but we found that students from all of the other departments were taking the digital media courses. As we looked at that, it got clearer to us that digital media is really like English or basic math or science, in the sense that it's a core discipline for any well-rounded student. So, we transformed the digital media department into a component of our foundation program. Now, all students are required to take some digital media courses, and most take many more than they are required to. And the curriculum in the digital media track is very flexible and responsive to whatever expressed interests and needs the students may have at any given time, so interaction and experienced design courses are almost universally chosen by the students at Art Center.

> "The computer should be tasked with **supporting and conforming** to the person's **needs and constraints,** and not the other way around."

RC: What you point out is my experience as well, with regard to redesigning the curriculum in the face of the new media. There are several courses at Carnegie Mellon that emphasize the role of new media from within the liberal arts tradition, so it's a kind of deep literacy that we're really exploring here.

BL: Carnegie Mellon really led the way, when they drew connections between rhetoric, design, and computer science. It's just grown from there. It's a great institution.

RC: Related to deep literacy and the use of various interactive media, you once wrote that 'The coming times call for a complex form of ethical literacy—the ability to determine what is true, good, and valuable in a world that is radically different from our own.' What do you mean by that?

BL: We're surely seeing it unfolding right now. I wrote that before 9/11, and the complexities of our situation are a lot greater now than I imagined then. I think that over the last, say 50 years, American ethical and political intelligence has been relentlessly dumbed down by consumerism—and by that I

mean the creation and fulfillment of desire, as opposed to an economy that would work around the genuine satisfaction of real needs. I think, until quite recently, the media has been the servant of consumerism and the conduit for advertising and social modeling through programming content that's made us an increasingly passive people. And I think the Web promises to change that, but the economic recession has really slowed that progress down.

RC: Well what is the potential of the Web, as a more interactive medium, to help in reducing that passivity?

BL: It is true that people can get a more personalized and probably more diverse view of what's going on in the world by looking around on the Web, and they do and can publish their personal views via Web logs and chat rooms. The problem then becomes, how does somebody find that? How do people begin to communicate around these snippets of personal writing or views when they're so distributed on the Web? One answer that my class is currently working on at Art Center is to figure out ways of both collecting and aggregating personal stories and personal views into a channel, if you will, an interactive channel that has the same weight and cultural size as the broadcast media. That's the final step in the process, to me. Certainly we have the ability to express personal voice and to find personalized information. What we don't have is the ability to transform that into a widely used forum for developing citizenship. So I think that strategies around aggregation, publishing, and dissemination, along with increasing the size of the forum for public discourse on the Web is the problem that's in front of us right now.

RC: But do you think that this problem will eventually be addressed?

BL: I have faith that will happen and that we can certainly be training our students right now in how to utilize the Web to change things like the construction of power and consciousness in citizenship and personal voice.

RC: Is this a political or technological problem?

BL: Both. I can't disentangle this discussion of interactive media from politics because I think it's logically inappropriate to do so. The challenge is to have some awareness of how our principles and our behaviors affect the world situation at all levels.

RC: How can we as educators respond to this challenge?

BL: The most tractable problem is to use technology to model the physical environment and our impact on the environment. It's harder, but I think it's just as important, to start thinking about how to model the effect of purchasing decisions or our sense of entitlement or our understanding of personal freedom and tolerance. In general, I think Americans need to be ethically and intellectually tuned up in order to see the complex and subtle relationships among things like local personal behavior, global social justice, and planetary health. So, for example, we do things in my program at Art Center like tracing the life history of your shirt or your breakfast cereal, to start thinking about the interconnectedness of all that we do and to begin to create some more sophisticated technology-based models.

RC: Could that include current issues like the situation in Iraq?

BL: I've seen educational institutions responding to the war, and there has been a real, amazing lack of dogmatism and superficiality, at least at Art Center, in the way in which that issue has been worked into what we're doing in all areas. Students have investigated the war and the complexities of its historical situation in all kinds of ways—visually, and interactively. I think the willingness of institutions and teachers to encourage students to explore contemporary matters that are highly politically charged, is what will lead us into new cultural and political literacy. I think that as educators we just have to become more and more aware and willing to latch onto the real world and all of its chaos and diversity to help students understand why education matters and to make the education we give them something that will empower them to act for positive change throughout their lives.

RC: Well I know in my own case, my students certainly feel free to go to online forums and discuss these kinds of issues, and it is in a certain sense a kind of virtual polis or city-state that gets created in some of the best images of these kinds of discussions. And I'm sure that there are roles here for vivid simulations.

BL: I think that simulation is such a flexible tool that it really gives us the chance to hook into what's on everybody's mind right now and re-work the curriculum around the issue—not the other way around.

RC: And since simulations are, in a certain sense, representations, I guess that brings us back to Aristotle's understanding of Poetics, and your understanding of Human Computer Interaction.

BL: Yes, and the original idea of the theater as a place where the public thought together about issues of deep importance just keeps coming back. It's always amazing to me that those early tragedies, you know, the ones written by Sophocles and Euripides, and the comedies of Aristophanes were stories that people already knew. It wasn't about, 'Oh gee, what's going to happen next?' It was about, 'Let's look at this again from the context of today, sitting all together in a public place, and let's see this as part of both our spiritual and our political practice.' That's a really robust model and I think it's as applicable today as it was 2,500 years ago.

[***Editor's note: Brenda Laurel will give a keynote, "Integrative Design: Revisioning Educational Infrastructure," on Wed., July 30, at Syllabus2003; and Robert Cavalier will present a full-day seminar, "Building a New Media Curriculum on a Liberal Arts Foundation," on Sun., July 27.***]

Robert Cavalier, Ph.D. *(**rc2z@andrew.cmu.edu**), is a member of the philosophy department at Carnegie Mellon University (CMU) and director of CMU's Minor in Multimedia Production.*

Leading the Way to Virtual Learning:

The LAAPhysics Laboratory

Gerald W. Meisner, Harol Hoffman
UNIVERSITY OF NORTH CAROLINA-GREENSBORO

"THIS IS JUST LIKE BEING BACK IN LAB!" SAID ONE RECENT STUDENT TESTER OF THE LAAPHYSICS ONLINE VIRTUAL LABORATORY. "IF I HAD TO CHOOSE BETWEEN THIS AND A LECTURE COURSE? NO CONTEST—LAAPHYSICS!" SAID ANOTHER, ECHOING THE SENTIMENTS OF THE TESTING GROUP. "THE GRAPHICS ARE TERRIFIC!" WAS ANOTHER COMMON RESPONSE.

Perhaps the most important reaction—from the developers' point of view—was from a student who said, "I really appreciated not being told I was wrong but rather being led to another [laboratory] investigation that let me see things correctly." And finally, "I finished the whole module in two hours and I had no idea I was working that long!"

Unique Online Learning

These opinions were among the early testing results of Learn Anytime Anywhere Physics (LAAPhysics), an online virtual laboratory learning environment being developed at the University of North Carolina-Greensboro. Although student response so far is positive, a more thorough road test is coming during the next academic year when the project begins extensive external beta testing with nearly 100 faculty and institutions signed up to participate.

Supported in part by the Department of Education's Fund for the Improvement of Postsecondary Education (FIPSE) program, LAAPhysics is designed to replicate the experience of taking a real-world, highly interactive laboratory immersion class. The project is creating a unique, online learning instrument that can be used by faculty in many disciplines. The environment includes virtual lab equipment, instruments, and associated curriculum modules. Real-time assessment and feedback, as well as virtual students who collaborate with their real-life counterparts, are integrated into each learning module.

The online system is designed to create a laboratory-based physics course that incorporates both open exploration and guided investigations that can be used either as a stand-alone distance learning course or as an enhancement of existing, conventional lecture courses. The courseware architecture is not limited to a physics curriculum. Faculty will be able to use the LAAPhysics platform as the "lab" component of any distance learning science course or as a tutorial for remedial work. Other possible uses include acquiring credit for missed lab work, interactive and open-ended student investigations, and student assessment using model-based deployment activities. All this in a 24x7 asynchronous mode.

But the key advance of LAAPhysics is philosophical rather than technical. The platform supports an environment where students are actively engaged in their learning. This goes beyond current interactive simulations where students can manipulate variables but where independent decision making is constrained. In "naked" simulations, the amount of interaction and the level of student engagement fall far short

of a real lab experience. In contrast, the central idea of LAAPhysics is making a virtual lab environment that allows students to make mistakes, measurement errors, and much more—conditions very similar to those confronted in real labs.

The Software Platform

From the student standpoint, using LAAPhysics consists of three main activities: receiving course content and answering questions in the Tutor window; performing experiments and generating data in the Laboratory window; and recording data and conclusions in the Notebook window. These components are designed to work together, but they can also be used independently of each other.

The Tutor component serves as the central hub of the system. It connects the student's machine to the central server, receives, formats, and displays course material, sends student responses back to the server, and configures the Laboratory and Notebook as the course requires. The Tutor may pass instructions to these applications and change which lab setup is available for the student to use. When asking questions, the Tutor supports a variety of answer types, using unique visual tools we have developed.

The Laboratory includes a series of lab "setups," each designed to support a particular educational objective. The majority of these setups take place inside a virtual laboratory classroom and are designed to prepare students for real-world labs. One of the goals of LAAPhysics is to develop skills that are transferable to other venues; thus, care is given to the detail of various instruments and pieces of apparatus. But "outside situations" are also possible. As shown in Figure 1 (p. 28), an LAAPhysics mentor has told a student that a group of unruly freshmen plan to march up to the science building with mischief on their minds. Armed only with her knowledge of kinematics models, a water bag, a launcher, and the height of the building, the student calculates how to fire the bag in order to hit and disperse the rowdy crowd. That done, she lets the scenario play out and the result unfolds before her eyes.

The Notebook is a simple drawing, word processing, and graphing analysis application designed to provide students with all the tools necessary for a laboratory notebook. Content created in the Notebook is automatically stored in the central server, making it possible for a student to move from machine to machine, and permitting the teacher to easily examine the student's work.

All material generated by the student reside in a server database. The LAAPhysics project is seeking additional funding to develop extensive data analysis and mining tools to use with this unique data set.

Build Your Own

In order to maximize usefulness generated per dollar spent, the LAAPhysics project is designing all the tools used in the creation of the course to be modular, flexible, and extensible. With the LAAPhysics platform, it should be possible to create, distribute, and run a chemistry course that is similar to the LAAPhysics course, and only marginally

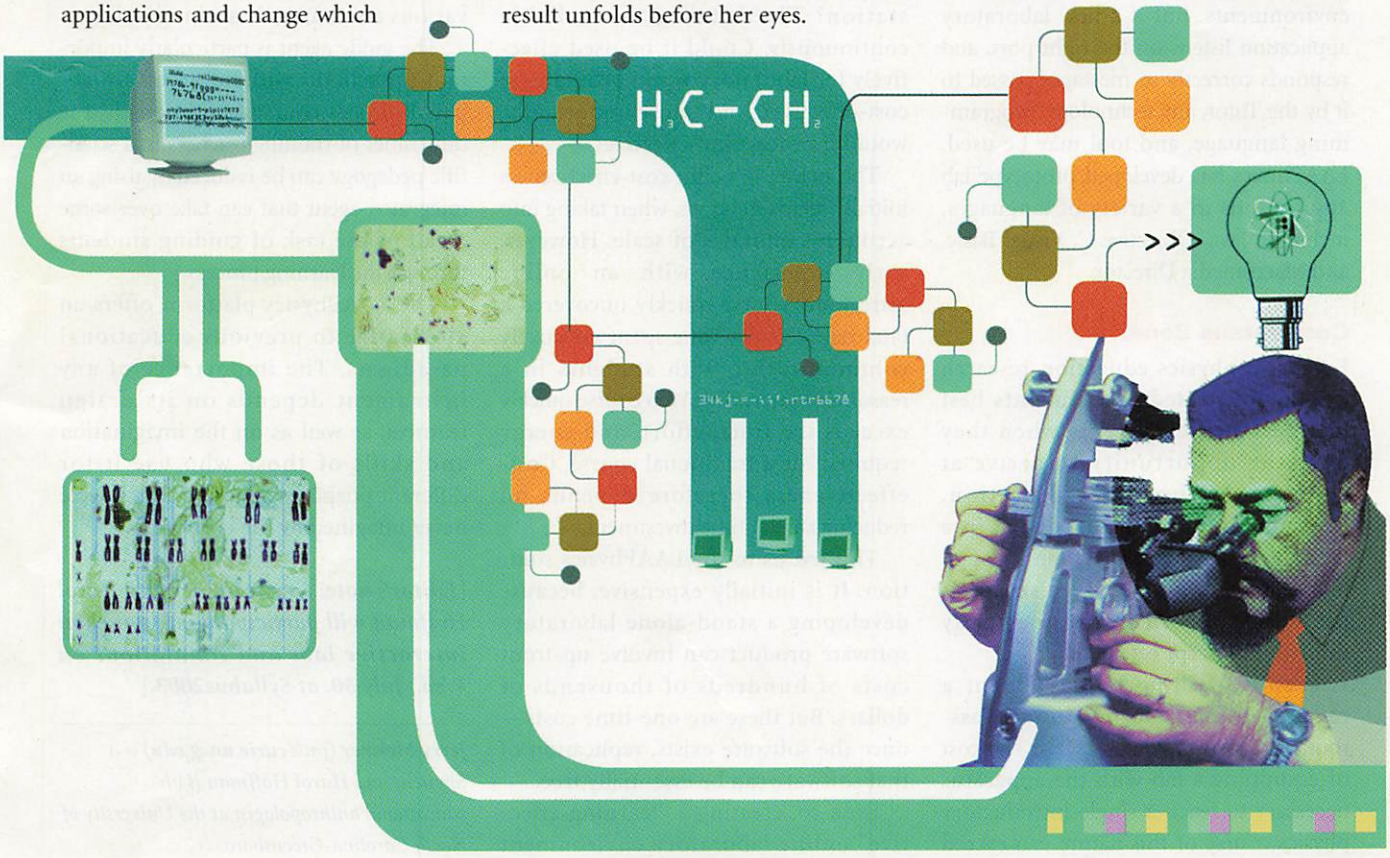


Figure 1: An "outside situation" presented to a student in the virtual laboratory. (Graphic courtesy of Rob S. Furr.)

more difficult to create a course in the humanities or the fine arts.

To ensure maximum extensibility, LAAPhysics course content is not built into any particular part of the program. Instead, it is written and formatted in a markup language much like HTML. The LAAPhysics Markup Language (LPML) and the associated editor, now under development, will allow the easy creation of course content by non-technical users.

However, the laboratory setups cannot be created through markup language development alone. Instead, they must be built in more complete programming environments. But if a new laboratory application listens on the right port, and responds correctly to messages passed to it by the Tutor, any technology, programming language, and tool may be used. LAAPhysics has developed prototype lab applications in a variety of languages, including Java, Objective C, Visual Basic, and Macromedia Director.

Cost Versus Benefits

Extensive physics education research has demonstrated that students best learn scientific concepts when they have the opportunity to arrive at conclusions through exploration, experimentation, and feedback in a laboratory setting rather than through lectures or textbook exercises. This method of learning dramatically improves concept retention.

Faculty wishing to implement a research-based pedagogy in the classroom face two major obstacles. The cost of equipping a lab with the apparatus necessary to teach a single introductory physics course of this nature can exceed several thousand dollars per student workstation. That doesn't even take into account the cost of dedicating precious building space to exclusive laboratory use or the problem of different students at different levels using the same station. In addition, relatively few faculty are trained in these pedagogies and fewer have the time to implement them appropriately.

We tackled two online course barriers described by others: cost and time effectiveness. Could a standard, one-thousand-dollar computer provide a similar laboratory function as a several-thousand-dollar lab workstation? The Internet is available continuously. Could it be used effectively for laboratory work? Would it be cost-effective? And, most importantly, would it be learning-effective?

The answer to online cost-effectiveness initially seems to be *yes*, when taking into account economies of scale. However, early experience with an online astronomy course quickly uncovered a fatal flaw. Faculty time spent effectively communicating with students in a reasonably interactive Web course quickly exceeds the time, effort, and energy required for a traditional course. Cost-effectiveness therefore depends on reducing faculty time investment.

This led us to the LAAPhysics solution. It is initially expensive, because developing a stand-alone laboratory software product can involve up-front costs of hundreds of thousands of dollars. But these are one-time costs—once the software exists, replication of that software can be essentially free.

Even so, creating a "learning-effective" online laboratory environment presented a difficult challenge, more daunting than raising the needed funding. Traditional Web tools such as e-mail, chat rooms, and streaming video can be used, but they are basically data transfer tools: one participant has detailed data, and other participants receive it. This is an excellent paradigm, where the goal is the efficient transfer of information. But it introduces serious limitations when the objective is high-level scientific learning, where models must be experientially developed.

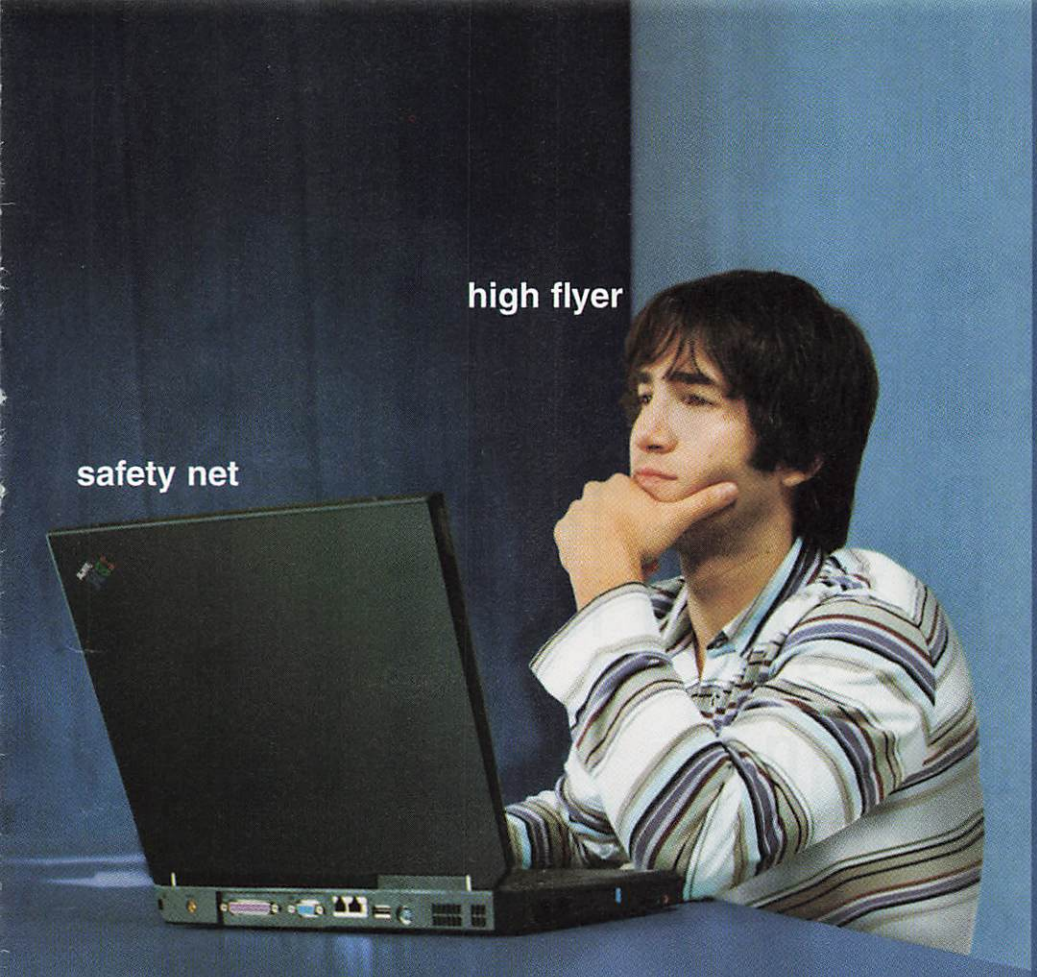
In LAAPhysics, students are guided along answer-dependent paths to reach their own conclusions. Students actively participate in the decision about what apparatus is needed, how to set it up, and how to refine an experiment to better achieve a goal. The built-in guide agent's "intelligence" is based on a large body of research on how students learn particular concepts in physics. This body of work significantly reduces the need for complex artificial intelligence systems because content developers can predict student responses at each of the various assessment branching points.

The guide agent is particularly important for schools without access to lab-based physics courses. Additionally, the difficulties of training teachers in a scientific pedagogy can be reduced by using an integrated agent that can take over some or all of the task of guiding students through the learning process.

The LAAPhysics platform offers an alternative to previous educational paradigms. The importance of any instrument depends on its design features, as well as on the imagination and skills of those who use it for different purposes, many of which were never imagined by the creators.

[***Editor's note: Jerry Meisner and Harol Hoffman will participate in a panel on interactive labs and simulations on Wed., July 30, at Syllabus2003.***]

Jerry Meisner (jm@curie.uncg.edu) is a physicist and **Harol Hoffman** *is an educational anthropologist at the University of North Carolina-Greensboro.*



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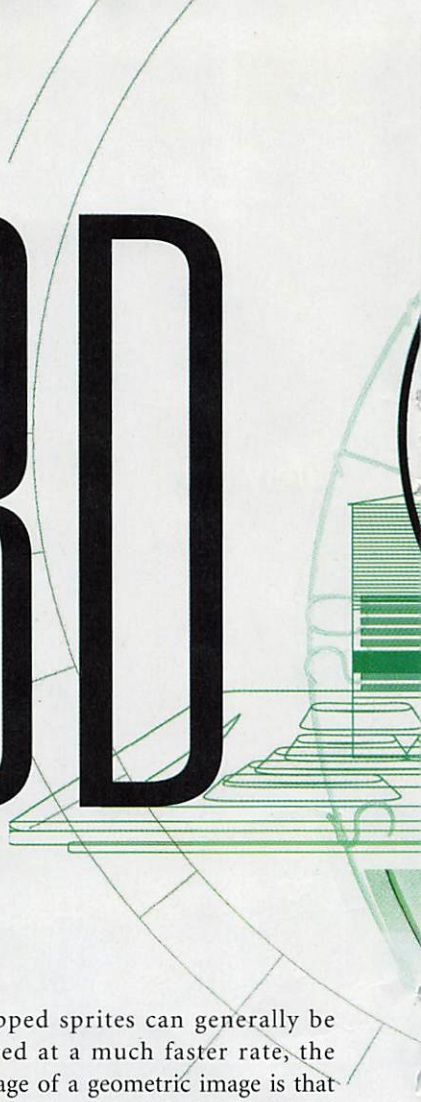
Interactive 3D

Using It, Designing It, and Teaching It



Marty Plumbo, University of Cincinnati

After several false starts, interactive, real-time 3D graphics (IRT3D) is finally starting to happen. Advances in the processing power and graphics capability of inexpensive desktop computers have created the first generation of consumer-grade systems capable of generating three-dimensional graphics of satisfying speed and quality. Now the user can truly interact with these advanced representations in real time, creating powerful new possibilities for the visualization of digital information.

While the first beneficiaries of this new capability have been those who play games on their computers, the potential of IRT3D to transform other aspects of human interaction with computers is being demonstrated more and more. From eCommerce to educational software, the rate at which IRT3D continues to improve is matched only by the demand of the market for real-time content. Media trends forecaster Jon Peddie & Associates estimates that by the year 2007 there will be more than one million 3D Web sites and over half a billion 3D-enabled Web browsers.

It isn't an overstatement to suggest that we may be watching an evolutionary leap in the progression of how computer images are created. And all of this is important to us as designers and educators because it not only presents us with exciting new methods to create expressions of information, but also with new skills that we must challenge our students to investigate and master.

Defining IRT3D

Unlike traditional sprite graphics, such as bitmapped images, 3D graphics are based on mathematical descriptions of the surfaces of the objects that they depict. Specifically, the surfaces are described in terms of polygonal geometry, which "models" or approximates the surface as a blanket of polygons. While bitmapped sprites can generally be rendered at a much faster rate, the advantage of a geometric image is that the perspective from which it is viewed can infinitely be changed.

Animation, on a computer or otherwise, consists of a series of slightly transformed images played in sequence fast enough that they appear to be a single, fluidly moving image. This is possible by virtue of a phenomenon called "persistence of vision" by which physiological components of the brain will "blur" successive images, so long as the images occur at or beyond the threshold rate of around eight frames per second (fps). In practice though, ideal results are realized at around 24 fps. Thus, 3D animation consists of a series of slightly transformed images, modeled from geometry, observed at a sufficient rate to look like real motion.

When the various images that make up an animated sequence are created in advance of their being viewed, they are said to be "pre-rendered." These often take the form of digital videos, which typically feature extreme detail.

Conversely, animated images rendered at the exact moment that they are viewed are called "real time." The trade-off of generating images in real time at rates sufficient for animation is generally the relative lack of detail that they can feature.

Animation that plays in a predefined sequence is said to be "linear." Pre-rendered 3D is generally linear. However, when we combine the ability of a computer to create 3D graphics in real time with its ability to be programmed, we have the ability to create 3D graphics that interact with the user in a responsive and logic-driven manner.

Using IRT3D

In looking at the actual use of IRT3D as a medium, there are six categories that hold particular promise. It is particularly useful to bear these categories and their distinctions in mind when beginning an exploration of IRT3D design methods:

1. Games: This category consists of entertaining content that involves the activity of play within a goal-based, competitive, and challenging structure. IRT3D has been used in games for some time already, to great effect.

2. Non-Game Entertainment: Active or passive entertainment experiences that are not goal-oriented. The most common example would be the emerging medium of the "interactive narrative."

3. Informative: Activities that are driven by specific educational goals. Content in this category is authored in a manner that teaches rather than merely delivers knowledge. Examples are educational software lessons and interactive instructions.

4. Reference: Content that is categorized or indexed in order to accommodate its retrieval. Unlike "informative" content, reference material is presented in whole based on query. Examples include maps, directories, and simulations.

5. Persuasive: Content that seeks to influence the user, such as to buy something or to assimilate a point of view. Examples include commercial and political content.

6. Aesthetic: This category includes artistic or experimental expression.

Most of my work with IRT3D in the past year has been to develop a formalized approach to teaching it. There is little foundational pedagogy in this area other than what can be synthesized from the various disciplines that it covers. Still, I have pieced together and tested in the classroom "laboratory" what seems to be a promising starting point. Using a series of key concepts as the framework for a quarter-long (three-month) studio class, I have been able to achieve significant results from my students (see "IRT3D: A Template Curriculum" on p. 32).

Designing IRT3D

It is just as important to have good authoring tools to create IRT3D content as it is to have computers capable of delivering it. One of the primary reasons IRT3D may well succeed now is that established companies have brought relatively easy and broadly applicable IRT3D tools to market, all of which allow the authoring of IRT3D content, using 3D content from existing tools.

In fact, the production of IRT3D taps the existing knowledgebase and functionality of established tools in each step of the workflow. For instance, a typical workflow might include creating 3D models and scenes in Alias|Wavefront

IRT3D: A Template Curriculum

Workflow and Tools
IRT3D authoring consists of two primary components: asset creation and programming, in that order. The first step in comprehending the authoring process is to understand this workflow, the various tools available, their roles at each step, and the specific tools being used.

Modeling and Texturing for IRT3D
The overriding consideration in creating assets for IRT3D is to craft them to accommodate the intense performance needs of real-time 3D rendering. Key among these are low-polygon modeling techniques, as well as desktop computer-friendly textures.

Transforms and Transformations
The ability to manipulate the position, orientation, and scale (PSR) of an object in 3D space is the key to being able to program it to do practically anything of use. The transform object is an abstraction of the complex matrix math that remembers the PSR of a 3D object, while the transformations are functions that allow the transform to be manipulated transparently. Understanding what each is and how it works is the crucial first step to learning how to program IRT3D.

2D to 3D Interface Approaches
Creating visual and conceptual metaphors for the user to interact with objects in 3D space is a field of study in itself. We explore this in terms of both visual and kinetic devices. Visual devices include the various on-screen elements that the user can manipulate to affect the 3D world and the objects in it, such as "dashboard" controls at the bottom of the screen. Kinetic devices include those that involve user interaction with hardware to affect the 3D world, such as mouse gesturing, picking, and keystrokes.

Cameras and Perspective
This introduces the cinematic element. Aside from the technical chores associated with creating and manipulating one or more cameras in 3D space, there is now the design consideration of a psychological perspective.

Lighting
Also a cinematic element, but steeped in technical considerations. Lighting is one of the most taxing features of real-time 3D rendering and must be used judiciously. Still, it remains one of the most important and evocative elements available in creating drama and mood, focusing attention, and revealing/concealing geometry.

Groups and Hierarchies
Grouping allows multiple objects to be "joined" together to transform as one, while hierarchies allow objects to take on a "parent-child" relationship. Both groups and hierarchies have very profound influences on how objects within them will behave. Used strategically, they can facilitate complex control without the need for complex programming, as well as allowing composite animation.

Effects
As more and more 3D functionality finds its way to the graphics processors (GPU), more and more "effects" will become available in real time. Such hardware-based effects offer a powerful means of achieving stunning and seamless visuals without the need for a more powerful central processing unit (CPU). Two common examples are particle systems and fogging, each of which can be used to create dramatic and useful visual effects.

Maya, texturing surfaces using Right Hemisphere's Deep Paint 3D, processing sounds and digital video in Adobe Systems' Premiere, and then authoring interactive 3D with these assets in Macromedia's Director Shockwave Studio.

Remember that the authoring tools at the end of the workflow are key to the process. Increasingly powerful, flexible, functional, multi-platform, object-oriented, and multi-output programs have now made a relatively easy task of what has been the historically elusive task of creating viable IRT3D.

While this new breed of authoring tools has allowed designers to explore new ways of creating 3D visual experiences that look and act more like real life, new design challenges do not end there. One particularly acute example is in the area of Human Computer Interface (HCI) for IRT3D. Traditional computer interface devices such as the mouse, track-pad, and screen are all 2D devices and fall somewhat short as intuitive and effective means of placing the hand of the user in the virtual 3D world of the computer.

While the initial work in IRT3D HCI research was focused on interfacing virtual 3D worlds with 2D devices, it has recently expanded to explore engaging more of the senses, so as to make the interface experience itself more natural and intuitive. One example is the work to create IRT3D interface devices that include haptic response, so that a user not only negotiates virtual 3D objects and space through the device, but feels them as well.

[*Editor's note: Marty Plumbo will present a half-day workshop, "The Design and Programming of Interactive 3D for Educators," on Sun., July 27, at Syllabus2003.*]

Marty Plumbo (martyp@fuse.net) is an assistant professor of design in the Digital Design Program at the University of Cincinnati's School of Design, Architecture Art, and Planning (DAAP).

- University of Rhode Island uses ELMO multimedia presentation systems in its auditoria and classrooms.
- Eastern Michigan University employs a Sony mixer.
- **This Month Online:** Univ. of Minnesota uses WebCT to provide online resources to students; Seattle Community Colleges Television (SCCtv) broadcasts digital content on the Internet; Kennesaw State Univ. implements a distance learning platform.

University of Rhode Island ▪ By Jane Suvajian

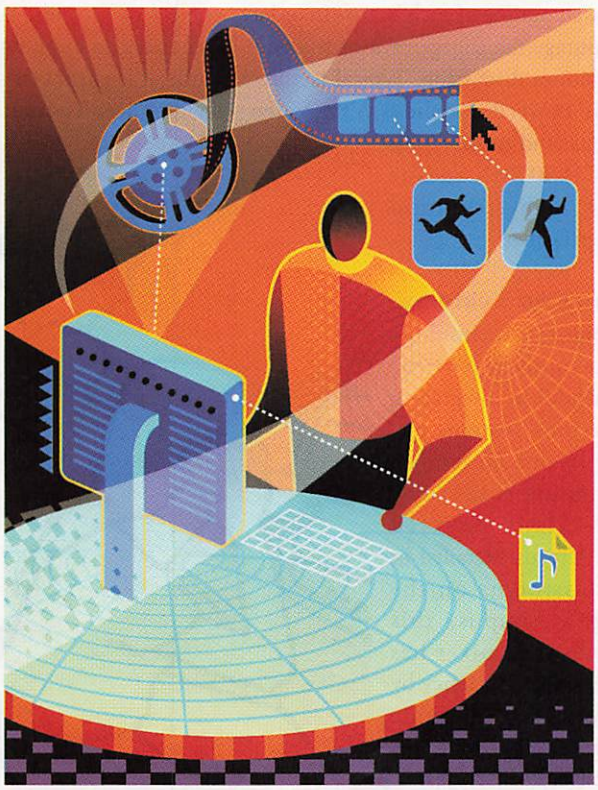
It's All in the Presentation at URI

The University of Rhode Island (URI) is located on 1,200 acres of hilly, wooded countryside in the town of Kingston. On the coast, six miles to the east, lies the smaller Narragansett Bay Campus. In contrast to its bucolic appearance, the university has built a high-tech infrastructure capable of meeting the incredibly diversified educational requirements of the undergraduate and graduate students.

The Move to Multimedia

About a year ago, URI began installing advanced multimedia systems in its larger auditoria, putting a complete range of audio/visual instruments at the instructors' fingertips—visual presenters, VCRs, DVD, CD, and audio cassette players—that can be controlled from a single workstation in the auditorium.

According to Jane Suvajian, lead information technologist, each auditorium has an Epson ceiling-mounted projector and a permanently installed Middle Atlantic equipment rack, which accommodates the multimedia equipment used by instructors to display various materials. URI utilizes several ELMO visual presenter models. Most recently, ELMO HV7000SX high-resolution visual presenters are being utilized on carts that are rolled into the auditoriums and plugged into the racks. A system switcher in the rack allows the instructors to easily move from the presenter, to a laptop, to video, or other media.



The Chemistry and Biology departments have permanently installed the presenters and other instructional devices in the racks. Furthermore, rather than system switchers, wireless remote control systems are used to control the equipment in these rooms. Ms. Suvajian explains, "In these auditoriums, classes are held back-to-back from 8 a.m. to 10 p.m., making the permanent installation more practical than the portable carts that we use elsewhere."

Critical Clarity

With large auditoriums holding 50 to 500 students, the clarity of the images is critical. Ms. Suvajian explains, "The SXGA resolution of the ELMO HV7000SX Presenter allows our instructors to display colored textbook graphics, small details, and hard text pages with great clarity." The instructors toggle between laptop, video, and presenter, which all require high resolution and good quality definition of detail.

Prior to purchasing the new equipment, the university utilized the ELMO HV5000AF Presenter for classroom use. After the Classroom Management Team solicited faculty input from the many colleges of the university, the school upgraded to the HV7000SX. This decision was made because of the improvement in digital quality, ensuring an optical projected image given the existing software and classroom LCD projectors, its focusing ease, and higher resolution.

Getting Started

At the start of each semester, Classroom Media Assistance staff offer media training for the larger auditorium classroom-installed equipment and short course instruction for the smaller classrooms where media is brought in for use. But for the URI faculty, "The ELMO HV7000SX seems easy enough for quick hook-

up and user-friendly operation. Within a matter of a few minutes, even the casual media user can master the projector, as it is well labelled and written instructions can be minimized down to one page," explains Mary Fetherston, Supervisor of the Language Learning Resource Center, who trains communications and world languages faculty at URI.

Going the Distance

While many courses at URI are taught in the traditional classroom environment, students and faculty may also take advantage of the university's distance learning facilities. These classes allow courses to be delivered via interactive audio/video conferencing or an asynchronous Web-based format.

Video conferencing allows teachers and students to link classrooms and resources using multimedia tools such as VCRs, visual presenters, DVDs, digital cameras, and personal computers to take advantage of new education technology. The online asynchronous format uses tools such as WebCT to deliver courses exclusively on the Web anytime, anywhere.

According to Tim Tierney of URI's Instructional Technology and Media services, "The features of ELMO's EV6000AF visual presenters help us in many ways. For example, the zoom feature allows us to use graphics of mixed sizes without any special preparation. We even fold the camera head down from its normal position so that it can give us another camera angle on activities in the room during video conferences. We have the ELMO presenters set up at the instructor's station always in a ready-to-go mode, connected to the projector via the S-video out."

While the larger multimedia auditoriums at URI have been upgraded, the university is now focusing on smaller 35-student classrooms for media installation.

For more information, contact ***Jane Suvajian****, lead information technologist, University of Rhode Island, at* ***JaneMedia@uri.edu****.*

Eastern Michigan University ▪ By Dr. Donna K. Woodiel

High-Tech Gear Integrates Diverse Format Presentations

The professional education programs at Eastern Michigan University are on the "cutting edge" of preparation of education (and related) professionals. In the fall of 1999, the College of Education moved into the newly renovated Porter building. We are fortunate to have access to a wide variety of technology options in the College of Education.

All of our classrooms are wired. Media carts, which provide a computer and projector, are available for checkout from the Bonisteel Computer Lab. In addition, four of our classrooms are completely equipped with all of this technology set into a single equipment rack. These have been labeled our "smart classrooms." There are also two "smart" lecture halls and a distance/compressed video "smart" classroom for a total of seven. Porter is a wireless building and a laptop cart in any classroom can connect to the Web.

Class Load

My teaching load typically includes classes such as Health Education in the Elementary Grades, Substance Use and Abuse, Psychosocial Health, and Women's Health. The lectures for these classes are formatted with PowerPoint slides, and my classes have Web pages that include an outline of each lecture in order to encourage the engagement of students in classroom discussion. Typical lectures include PowerPoint slides, VHS video segments, and music using the CD-ROM and/or ELMO high-resolution digital presenter.

Integrating Systems

One piece of technology that has proven particularly helpful in integrating the various systems engaged in our classroom presentation is the Sony SRP-X351P powered mixer. Already installed in five classrooms on the college's campus, this sophisticated mixer has increased our efficiency by saving us considerable time in the preparation and delivery of lectures.

For example, if I am using PowerPoint slides, a video segment and/or a CD in class, the Sony system allows me to easily switch teaching mediums in a matter of seconds. While this would be beneficial to any teaching field or discipline, it is particularly important for the field of health education.

Interpretations in terms of human need, human value, and human potential require that health education go beyond providing fundamental knowledge about the various health topics.

It is imperative that we assist students with increased self-awareness of their individual health status; that we help them utilize personal and community resources to create their individual health profile, and that we challenge them to think carefully before making decisions that affect their health status.

Keeping Up-to-Date

Health decisions should be based on the best available research and be consistent with who the student is, their values, and beliefs. Classroom technology is a valuable tool for assisting students in finding the best information to guide their health decisions. Technology allows students and teachers to access the most current information available in the ever-changing field of health education.

Because of health's "ever-changing" nature, it is necessary and important that we share "new" information with our students when it is available. Technology in general—and the Sony system specifically—facilitate immediate changes in lecture information when necessary.

For example, the 1990s was known as the decade of the brain, in terms of research. This research has had particular significance in terms of "new knowledge" about gender differences, as well as the entire realm of addiction.

Because of the time demands on schedules of university professors, if new information does not make it into the lecture prior to the beginning of the semester, the professor can be left with a verbal reference to the change at best. The Sony system allows for that change to be made to the lecture as quickly as the research is available, which enables us to better meet student needs. Additions and deletions can also immediately be adjusted to lectures as students provide input.

Smart Classrooms

Health Education in the Elementary Grades is a class required of all future elementary teachers. Our focus centers on the Coordinated School Health Program, Comprehensive School Health Education and the six risk behaviors identified by the Centers for Disease Control.

Early in the class schedule, the students are introduced to the multidimensional nature of health and charged with creating ideas for the different dimensions of wellness in their future classrooms.

As a part of this assignment, the students complete a self-assessment on their general level of wellness. The Sony system allows me to immediately leave the lecture on Wellness and take the students to each of the six Web sites that are possible for the completion of their self-assessment.

The Centers for Disease Control and Prevention produces a CD which has all of the statistics for the Youth Risk Behavior Survey. This survey provides the data for the identified six risk behaviors of today's youth. When covering these risk behaviors, the Sony system facilitates the easy switch from the lecture to the CD, where the class can review both the national statistics and the statistics for the state of Michigan.

One valuable teaching resource for this class is the Nickelodeon Web site for teachers. They encourage teachers to tape any of their "Cable in the Classroom" series. Additionally, they offer a link for lesson plans that parallel each of the different segments in this series.

Two of the content areas covered in this class are First Aid and Loss and Grief for children. The Sony system allows me to readily switch from the lecture on these content areas, view the Nick New video and immediately link to the lesson plans offered at the Nickelodeon Web site.

My Drug Use and Abuse class is another example of how I use the Sony mixer in my lectures. The class serves as an elective for several other fields including law enforcement, psychology, sociology, and criminal justice.

I use the Moyer video series on Addiction. This provides the students a look at real addicts with real stories about their battle with addiction. The physiology lecture is greatly enhanced by switching to the video segment, "The Hijacked Brain." The lecture on drugs as a social problem is assisted by the video segment, "The Politics of Addiction." Further, I am able to leave the lecture on theories of addiction or families in addiction and take the students to actual treatment facilities in the video segment, "Changing Lives."

One of the assignments in the class is for students to create and present their own Public Service Announcement (PSA). Many of the students create PowerPoint presentations with audio and/or video segments.

The students are initially intimidated, but easily learn and use the Sony SRP-X351P in their presentations. I believe "cool" would be the adjective most used to describe their experience presenting their project with the system.

Additionally, there are numerous Web sites, such as the Drug Enforcement Agency, that offer pictures of the various drugs in more detail than most textbooks allow. And when sites like the The Center for Substance Abuse Prevention offer Web casts, the Sony system allows for ease in integrating them into appropriate lectures.

Ease of Use

The Sony system is extremely easy to operate. A relatively short briefing more than prepares you for immediate assistance with your teaching.

Although we have technology experts available to us through our lab, they are more often sought for difficulties with Internet servers than the system itself.

For more information, contact ***Dr. Donna K. Woodiel****, assistant professor at Eastern Michigan University, at* ***kay.woodiel@emich.edu.***

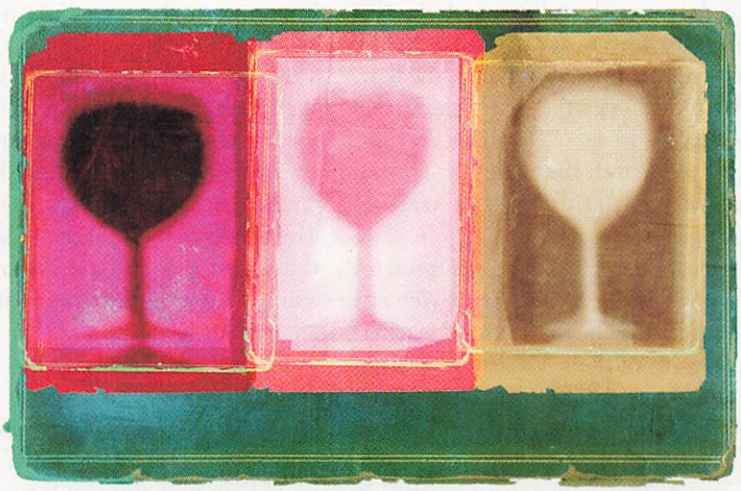
ONLINE RESOURCE ■ BY GERARD HANLEY

MERLOT: Peer-to-Peer Pedagogy

MERLOT, an acronym for Multimedia Educational Resource for Learning and Online Teaching, is a cooperative of higher education consortia, schools, professional organizations, and people who have formed a community to improve teaching and learning through the use of high-quality, online resources. MERLOT is designed to be a premier online community where faculty, staff, and students from around the world can share online learning materials and pedagogy.

MERLOT's mission is to improve the effectiveness of teaching and learning by expanding the quantity and quality of peer-reviewed, online learning materials that can be easily incorporated into faculty-designed courses.

MERLOT is a free, Web-based resource where faculty, staff, and students can easily find digital learning materials with evaluations and guidance for their use. It



enables faculty to effectively and easily choose and use the best online learning materials for their students that are compatible with their own teaching methods and the learning goals of their academic program. MERLOT does not store the thousands of actual learning materials on its servers, but simply provides the links and descriptions of the materials (metadata). The learning materials can also have links to sample student assignments for using the materials, peer reviews of the materials, and comments by members of the MERLOT community.

MERLOT has recently established the MERLOT Teaching & Technology community (www.merlot.org/Home.po?discipline=Teaching_and_Technology), which is designed to aid faculty and faculty development professionals in planning for successfully using online resources in teaching and learning.

MERLOT also contains profiles of its members. The Member Directory contains contact information, academic areas of expertise, and an ePortfolio of contributions. Members can also create and annotate personal collections of materials they find, enabling them to build elements of teaching and course ePortfolios easily.

Users do not have to be a member to use the MERLOT search engine. It is free for all users, with simple and advanced search options, as well as the ability to browse by subject category through the collection. Simple searching is a free text search in selected fields in the materials records. Advanced searching enables users to select a wide variety of fields and conditions to focus their searches. Searches result in a listing of the materials in MERLOT; default ordering of the list is that those items with the highest peer reviews are displayed on top.

Almost all of the information contained in MERLOT has been added by its users. They write the descriptions of the learning materials, learning assignments, user comments, peer reviews, and member profiles following Web-based forms. To contribute materials to the collection, a user must become a member, which is free and easy to do. MERLOT's discipline-based editorial boards also expand, organize, peer review, and manage the collection.

MERLOT conducts the peer review of online learning materials, a process that will help ensure that learning materials within the collections that address significant research issues are contextually accurate, pedagogically sound, and technically easy to use. MERLOT has modeled its peer reviews

on the discipline-based peer review of scholarship and research. The peer review process also provides a mechanism for recognition of faculty developing and using instructional technology. Individual members can provide their observations and evaluations on the learning materials within MERLOT, which complements the formal peer reviews.

MERLOT represents a partnership of more than 20 systems and institutions of higher education. Each Institutional Partner provides $25,000 per year and significant in-kind contributions to support faculty and staff collaborations. MERLOT also has Campus Members who provide $6,500 per year and Sustaining Partners who provide $50,000 per year. The California State University, which created MERLOT in 1997, continues to be responsible for the management, planning, and operation of MERLOT's processes and tools, in part supported by the yearly fees and NSF grants. MERLOT also develops alliances with professional societies and other digital libraries to work collaboratively on projects, grants, and outreach. Visit http://taste.merlot.org/partners_new/ for more details.

The Annual MERLOT International Conference provides many opportunities for professional development using academic technology in higher education. The MERLOT Faculty Development Workshop provides the Institutional Partners an intensive training program for their staff to learn how to implement MERLOT at their campuses. MERLOT also conducts a variety of planning and training meetings for its Project Directors' Council, Editors' Council, and Advisory Board as it continuously shapes its future.

Gerard Hanley is executive director of MERLOT. For more information, contact webmaster@merlot.org, or visit www.merlot.org.

PRODUCT ROUNDUP

Presentation Technology: Computers with Lights and Mirrors

Presentation technologies have evolved to a point where they are no longer mainly optical instruments, but like so many other mechanical devices are essentially computers adapted for the task at hand.

Indeed, projectors are not even mostly analog devices any more. Many that will come your way this year incorporate digital light processing (DLP) technology. This technology, invented at Texas Instruments Inc. in 1987, is an all-digital display solution for projectors, televisions, and home theater systems. Using an optical semiconductor, DLP recreates source material with high fidelity (see "DLP Technology: How It Works" on p. 41).

We have rounded up some of the best products in the presentation systems market this year, including some of the latest whiteboards, queuing devices, and control systems. It seems like it's never been a better time for professors to get their point across.

Projectors

BenQPB7220

This DLP projector boasts 2,500 ANSI lumens of brightness, a 2,000-1 contrast ratio, and true XGA (1024 x 768) native resolution. The model is HDTV compatible, includes multiple input terminals (2 VGA) and an output terminal (1 VGA), has a throw ratio of 60 inches at 6.6 feet, and features power saving under the video mode.

BenQ also offers a free, two-year "Xpress Xchange" program for the education market to accompany a three-year, limited warranty on the product.

Contact: ***BenQ America Corp.****, City of Industry, Calif.; (909) 569-0700; www.benq.com.*

BenQPB7220

Canon LV-X2

Canon's LV-X2 microportable projector weighs only 6.4 pounds. Native XGA resolution combines with 1,100 ANSI lumens for a bright and sharp image. The unit also features low fan noise for quiet operation.

A high-precision, wide-angle zoom lens facilitates a short throw distance of only 9.2 feet, producing a 100-inch diagonal image. A wide array of input terminals lets users connect a variety of external devices such as DVD players and VCRs.

Contact: ***Canon USA****, (800) 385-2155; www.usa.canon.com.*

Christie Digital DS30

The DS30 uses the latest Double Data Rate DMD for DLP display. The unit weighs just 6.6 pounds. The DS30 offers SXGA resolution (1280 x 1024), 3,000 ANSI lumens of brightness, and a super-high contrast ratio of 1,000-to-1.

The projector is quiet, at 28 decibels. It features front rear, and ceiling mount options, vertical and horizontal keystone correction, a single bulb with a 2,000-hour lamp life, and user-selectable aspect ratios.

Contact: ***Christie Digital Systems Inc.****, Cypress, Calif.; (800) 407-7727; www.christiedigital.com.*

Dell 2100MP

This DLP projector also falls into the microportable class at only 4 pounds. The native SVGA (800 x 600) resolution

projector features 1,000 ANSI lumens of brightness and a contrast ratio of 1,800-to-1. The 2100MP can be used on a desktop, mounted from the ceiling, or deployed as either a front- or rear-projection unit. This projector supports connecting a wide array of external devices and includes S-Video, Composite Video (RCA), Component Video, and HDTV inputs.

Other features include a wireless remote, hard-shell carrying case, digital zoom and digital keystone correction, preset video modes for optimum graphic and video settings, and quiet performance (32 dBA of sound output).

Contact: ***Dell Computer Corp.,*** *Round Rock, Texas; (800) 626-8286; www.dell.com.*

Digital Projection iVision sx

The iVision sx, Digital Projection's first ultra-compact DLP projector (6.5 pounds) displays an SXGA native resolution and produces 3,000 ANSI lumens. The iVision sx's intuitive user controls and extensive source compatibility render it simple to integrate, control, and operate.

The projector also features a contrast ratio of 1000-to-1, a throw distance of 1.5 to 10 meters, quiet (28 decibels) operation, and a low-cost, long-life UHP lamp system designed to last 2,000 hours. The unit can be ceiling mounted or used as a front or rear tabletop projector.

Hitachi CP-X885W

Contact: ***Digital Projection Inc.,*** *Kennesaw, Ga.; (770) 420-1350; www.digitalprojection. com.*

Dukane ImagePro 8757

Dukane offers the ImagePro 8757, an XGA, 2,500 ANSI lumen networkable DLP projector.

Network administrators have access to all necessary information about the projector: whether it is in use, needs service, is running low on lamp life, and more. The unit includes two computer and three video inputs, and is compatible with all types of video, including HDTV.

Contact: ***Dukane Corp.,*** *St. Charles, Ill.; (800) 676-2485; www.dukcorp.com.*

Epson PowerLite 53c

The Epson PowerLite 53c multimedia projector offers 1,700 lumens of brightness, SVGA resolution, and features such as monitor-out capabilities that allow the use of a monitor as a prompt, Epson's exclusive auto keystone correction, and convenient remote control.

The sleek 6.4-pound PowerLite 53c includes Epson 0.7-inch, high-aperture LCDs for vivid images and superior color saturation.

Contact: ***Epson America Inc.,*** *Long Beach, Calif.; (800) GO-EPSON; www.epson.com.*

Fujitsu LPF4800

The LPF4800 from Fujitsu features a brightness of 1,500 ANSI lumens, DTV and HDTV compatibility, digital keystone correction, digital zoom, and an infrared remote mouse control kit.

The projector uses a three-key system (power, auto, and mode) and an optional keypad with remote mouse function is available.

Contact: ***Fujitsu General America Inc.,*** *Fairfield, N.J.; (973) 575-0380; www.plasmavision.com.*

Hitachi CP-X885W

Hitachi's 12-pound CP-X885W features a brightness of 3,500 ANSI lumens, a contrast ratio of 800-to-1, and native XGA resolution. Additionally, the CP-X885W offers vertical and horizontal keystone correction, and numerous connectivity options including S-Video, composite, component, and RGB.

Other features include digital zoom and freeze, whisper mode, and a user-programmable start-up screen.

Contact: ***Hitachi,*** *Brisbane, Calif.; (800) 225-1741; www.hitachi.com.*

Christie Digital DS30

HP Compaq iPAQ MP3800

The HP Compaq iPAQ MP3800 digital projector offers 1,300 ANSI lumens of brightness, XGA resolution, and a contrast ratio of 800-to-1. The unit weighs only 3.5 pounds and features an integrated two-watt speaker.

Contact: ***Hewlett-Packard Co.,*** *Palo Alto, Calif.; (800) 888-0262; www.hp.com.*

InFocus LP790

The XGA-resolution LP790 features 3,000 lumens and a contrast ratio of 800-to-1. It displays PC and Mac computer images, DVD, HDTV, digital photos, and other digital images.

The unit operates with a noise level of less than 34 decibels and weighs 13 pounds. The LP790 also offers compatibility with ProjectorNet, InFocus' software solution that enables centralized control of projectors for convenience, interchangeable accessories, and optional security locks. This allows an IT administrator to manage multiple projectors throughout a school or campus remotely—including scheduling them to be turned on/off as well as notification of theft if the projector is disconnected.

Contact: ***InFocus Corp.,*** *Wilsonville, Ore.; (800) 294-6400; www.infocus.com.*

JVC DLA-QX1G

With its QXGA resolution, 7,000 ANSI lumens and 1,000-1 contrast ratio, the DLA-QX1G delivers images with super contrast, subtle gradations, and crisp detail. This projector is designed for ideal clarity in a wide range of applications. The DLA-QX1G features native QXGA (2048 x 1536) resolution, which means the image is comprised of 3.2 million pixels that result in a film-like picture.

Contact: ***JVC Professional Products Co.,*** *Wayne, N.J.; (800) 582-5825; http://pro.jvc.com.*

Megapower ML600

This microportable DLP projector weighs only 3.5 pounds. It delivers a contrast ratio of 900-to-1, XGA resolution, and 1,500 ANSI lumens of brightness. This model features HDTV compatibility, a manual zoom/focus, and relatively quiet operation (35 dBA).

Contact: ***Megapower****, United States, Hong Kong, and China; (800) MEGA-321; www.mega-power.com.*

Mitsubishi XD300U

The XD300U Ultraportable Colorview DLP projector features a long lamp life—4,000 hours—and XGA resolution with a brightness of 2,100 ANSI lumens and a contrast ratio of 2,000-to-1.

The projector is built with Mitsubishi's ColorView Natural Color Matrix for rich, vivid colors. Other features include picture-in-picture with split screen from two different sources, universal remote, and horizontal and vertical keystone adjustment.

Technology innovations such as Faroudja Direction Correlational Deinterlacing (DCDi) and sRGB technology provide smooth, natural-looking images and uniform color reproduction.

Contact: ***Mitsubishi Electronics America****, Cypress, Calif.; (714) 220-2500; www.mitsubishi-display.com.*

Optoma EzPro 757

This DLP projector from Optoma offers native XGA (1024 x 768) and SXGA (1280 x 1024) compressed resolutions, a contrast ratio of 2,000-to-1, and brightness of 2,300 ANSI lumens.

Included are a manual zoom, manual focus, remote control with mouse function and laser pointer, and capability to connect with a multitude of external tools, including HDTV. The unit weighs only 6.6 pounds and at 32 dBA runs quietly.

Contact: ***Optoma Technology Inc.****, Milpitas, Calif.; (408) 383-3700; www.optoma.com.*

Panasonic PT-D7600U

This large venue digital projector incorporates DLP technology and high brightness, and is appropriate for large auditoriums. The projector features SXGA resolution, 6,000 ANSI lumens, a contrast ratio of 1,000-to-1, and a lamp life of up to 2,000 hours.

The projector can be stacked with another one for a total brightness of up to 8,400 lumens. This model also offers one-touch "auto everything" setup with digital keystone correction. Available are a remote and a variety of optional lenses. The projector is network capable.

Contact: ***Panasonic****, Los Angeles, Calif.; (800) 528-8601; www.panasonic.com.*

Philips bSure Series

The Philips bSure series of projectors feature SVGA or XGA resolution (depending on the model chosen), 1,500 ANSI lumens, and a contrast ratio of 300-to-1. They also offer long-life lamps (3,000 to 6,000 hours) and a SmartSave feature extends lamp life even farther by switching off the projector after a user-defined interval.

The models in this series are quiet (27 decibels). Other features include anti-theft protection, HDTV-readiness, and digital zoom/focus and digital keystone correction.

Contact: ***Philips Electronics****, Atlanta, Ga.; (888) 873-4672; www.education.philips.com.*

PLUS U2-1200

The U2-1200 DLP projector from PLUS Vision features 2,000 ANSI lumens of brightness, XGA resolution, digital zoom, digital keystone correction, and a presentation timer.

It also includes a built-in second monitor output (loop-through), a requisite feature for multimedia educators. The feature allows teachers/trainers to project their curriculum to their classes while simultaneously being able to view the course content on their desktop monitors.

The new U2 projector comes with a long-life lamp (3,000 hours), and supports the latest in video standards including 480p, 780p, and 1080i high definition imaging, DVI (pure digital

InFocus
DLP
X1
SVGA, 1100 lumens, 2000:1 contrast.
Everyday Low Price $1099.00
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SHARP
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XGA, 1300 lumens, 4500 hr. lamp.*
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NEC
VT460
SVGA, 1500 lumens, 6.5 lbs.
Everyday Low Price $1199.00

HITACHI
CP-X327W
XGA, 1800 lumens, 6 lbs.
Call for Today's Low Price $2295.00

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*"Networked projectors can send maintenance reminders via email, **follow automated and timed instructions,** and allow remote diagnostics."*

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Call 877-233-4948
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EPSON SONY

signaling), RGB (data), component, and composite inputs.

Contact: ***PLUS Vision Corp.,*** *Beaverton, Ore.; (800) 211-9001; www.plus-america.com.*

Sharp Notevision PG-C45X / XG-C50X

Sanyo PLC-UF10

This powerful projector is the first to offer UXGA resolution (1600 x 1200).

The projector features 7,700 ANSI lumens of brightness (nearly 15,400 lumens when stacked), a contrast ratio of 700-to-1, and a four-lamp system. The unit weighs more than 70 pounds.

The PLC-UF10 uses a Digital Visual Interface, new, high-definition progressive scan, power lens shift, digital keystone correction, and power zoom and power focus.

Contact: ***Sanyo,*** *Chatsworth, Calif.; (818) 998-7322; www.sanyo.com.*

Sharp Notevision PG-C45X / XG-C50X

Sharp's two Notevision LCD projectors are identical except for the degree of brightness and difference in price.

The PG-C45X offers 2,500 lumens and the XG-C50X offers 3,000 lumens. Both feature XGA native resolution, a weight of 11.3 pounds, multiple lenses, support for all HDTV formats, and monitor loop through and multiple inputs, which permit simultaneous connection of two computers and video sources.

Security features include lockdown through optical block, key code startup, keypad lockout, customizable startup and background screens, and optional security cables.

Contact: ***Sharp Electronics Corp.,*** *Mahweh, N.J.; (866) 4VISUAL; www.sharpusa.com.*

Sony VLPX40 SuperBright Data Projector

The Sony VPLPX40 SuperBright LCD Data Projector is a flexible and powerful unit which can be used in many applications.

The system produces 3,500 ANSI lumens, bright enough to light up very large screens with enough contrast ratio to render detailed images. Includes native XGA resolution, the ability to be tilted up or down by 90 degrees, TCP/IP network control, a unique password authentication system, and a laser pointer remote control. It can be fitted with optional lenses for applications that require a shorter or longer throw distance.

Contact: ***Sony Electronics Inc.,*** *Park Ridge, N.J.; (800) 686-7669; http://bssc.sel.sony.com.*

Toshiba TDP-D1 and TDP-D2

Toshiba recently introduced two new portable DLP projectors. Weighing 5.3 pounds, they boast 2,000 and 2,500 ANSI lumens, respectively.

Designed for mobile professionals, educators, and small- to medium-sized businesses, the new projectors feature automatic keystone correction, 800-1 contrast ratio, XGA resolution, digital zoom, and a convenient remote control.

Toshiba's new projectors are also compatible with its full line of mobile products, including its notebooks and PDAs.

Contact: ***Toshiba America Information Systems Inc.,*** *Irvine, Calif.; (800) TOSHIBA; www.csd.toshiba.com.*

ViewSonic PJ250

This microportable DLP projector weighs only 2.2 pounds. It features 1,000 ANSI lumens of brightness, a contrast ratio of 2000-to-1, and native XGA resolution. Additionally, the PJ250 offers a one-touch setup button for fast, easy sync and sharp focus.

Capable of displaying digital and analog signals for integrated data, video, and audio, the PJ250 offers the flexibility for use on the road or in the office.

Contact: ***ViewSonic Corp.,*** *Walnut, Calif.; (800) 888-8583; www.viewsonic.com.*

LV-S2
1000 ANSI LUMENS, SVGA,
MICROPORTABLE

LV-X2
1100 ANSI LUMENS, XGA,
MICROPORTABLE

LV-5200
1700 ANSI LUMENS, SVGA,
ULTRAPORTABLE

FREE Projector Lamp
w/LV-7355 purchase
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Details at website

LV-7355
2200 ANSI LUMENS, XGA,
ULTRAPORTABLE

BRIGHT IDEA #2

Buying a projector from a company with a world-renown reputation for image quality is a bright choice.

CANON PROJECTORS: THERE IS A DIFFERENCE.

With all the projectors available today, selecting one over another can be a difficult task. So here's a way to simplify your choice. Instead of comparing weight, brightness, wireless operation, connectivity, and price, all factors that make projectors pretty much the same, focus on what makes them different. Only one projector line comes equipped with Genuine Canon Optics. And only Canon offers a full line of products to enhance viewing impact–digital and document cameras, and camcorders. Get the picture? The difference is image quality and the name that connects is Canon.

Canon's Full Line Of Presentation Products Add Visual Impact.

PowerShot S230
Digital Elph

Visualizer RE-450X
Document Camera

ZR70MC
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For product info and dealer locations, visit us online at ***www.canonprojectors.com****, or call 1-800-OK-CANON.*

Canon KNOW HOW™

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Interactive Boards

3M Digital WallDisplay

The 3M Digital WallDisplay features the ability to annotate directly over projected images, capture the changes, print, and save documents electronically for later use, as well as the capacity to share annotations and documents in real time via the Internet.

The product has a flat screen for glare-free viewing from a 170-degree field; a 60-inch large, diagonal screen with a 4-3 aspect ratio that is mirrored to business applications and viewing data; computer, video, and audio inputs; a replaceable screen with dry-erase and light-enhancement options; portability via the optional 3M Mobile Cart; and a handheld remote unit that controls all functions and options with presenter features of blank, reveal, freeze, pointer, and timer.

Contact: ***3M****, St. Paul, Minn.; (800) 454-5752; www.3M.com/walldisplay.*

Link-Systems WWWhiteboard

The WWWhiteboard is an interactive graphical chat tool designed to allow real-time communication of technical concepts. WWWhiteboard allows users to import and annotate gif and jpg images and type text on the board or in an attached chat window.

The product supports scientific and mathematical notation, special symbols, geometric primitives, graphing, and freehand drawing. It is cross-platform, so users do not have to standardize on expensive hardware or software. The WWWhiteboard is versatile and can be embedded in different applications.

Contact: ***Link-Systems International****, Tampa, Fla.; (813) 674-0660; www.link-systems.com.*

PolyVision Webster Suite

PolyVision's Webster suite of products now includes a wireless solution.

The wireless technology is available to accompany all Webster interactive products, including touch-sensitive and laser-tracking interactive whiteboards, plasma displays, and rear-projection units. Webster Wireless eliminates all cabling between Webster interactive whiteboards and the computer, requires no special software, and maintains a connection up to 30 feet even if someone walks between it and the computer. As a result, users experience freedom of movement and the ability to create flexible room arrangements.

Toshiba TDP-D1

The high-speed infrared (IR) connection of Webster Wireless allows quick capture as you write, and the projected mouse cursor moves in real time.

Contact: ***PolyVision Corp.****, Norcross, Ga.; (800) 620-POLY; www.polyvision.com.*

Rear Projection SMART Board 1800 and 1802

SMART Technologies introduces two new models of 72-inch, rear-projection interactive whiteboards. These whiteboards allow classrooms to collaborate on electronic documents, capture results of sessions, and create a complete record of materials and notes.

Users can access computer-based material using their fingers as a mouse, capture handwritten notes to a computer file and work naturally at the board without casting a shadow.

The Rear Projection SMART Board 3000i interactive whiteboard features a large screen in a slim, tapered cabinet that fits easily into a variety of rooms and into corners. This model also comes with an integrated projector and touch control.

Contact: ***SMART Technologies Inc.****, Calgary, Alberta, Canada; (888) 42-SMART; www.smarttech.com.*

Tegrity WebLearner Instructor

Tegrity's WebLearner Instructor software automatically captures many types

DLP Technology: How It Works

Digital Light Processing (DLP) relies on a rectangular array of up to 1.3 million hinge-mounted microscopic mirrors. Each of these micromirrors measures less than one-fifth the width of a human hair, and corresponds to one pixel in a projected image. They are packed tightly together, less than one micron apart, for a high "fill factor." Described by Texas Instruments Inc. as "the world's most sophisticated light switch," the mirrors of this Digital Micromirror Device (DMD) use their hinges to tilt either toward ("on") or away ("off") from the light source, creating either a light or dark pixel. Grays are achieved by various ratios of "on" to "off" mirrors.

As the white light of the lamp in the DLP projection system passes through a color wheel on its way to the surface of the DMD panel, the color wheel filters grayscale into red, green, and blue. From this, a single-chip DLP projection system is capable of generating at least 16.7 million colors, creating an image that closely mirrors its source material. To enhance the brilliance, Texas Instruments is in the process of introducing Sequential Color Recapture (SCR) technology, which promises to deliver up to 40 percent more lumens to the screen than was previously possible.

Because the technology is digital, it is not susceptible to heat, humidity, or vibration that can cause an image to degrade over time. To date, more than 50 manufacturers have installed more than 1.5 million DLP systems. Many systems have been in use for six years now, bearing out Texas Instruments' claims of reliability and durability. Perhaps, like the hinges and mirrors that made it possible, digital light processing will someday be perceived as commonplace technology.

For more information on DLP technology, vist www.dlp.com.

Projection Technology Glossary

Aspect Ratio: The ratio between the width and height of a screen.

Ceiling Mount: Simply, the ability to mount a projector from the ceiling of a room, for unobstructed view of the screen. A projector with ceiling-mount capability will also have the ability to invert the displayed image.

Compression (Compressed XGA, for example): All projectors have one true "native" resolution. To display images created in a higher resolution, they must compress the image to fit, eliminating some data. Good compression technology retains resolution, allowing users to read type as small as 10 points. This is a key factor for users considering purchasing SVGA equipment.

Contrast Ratio: The contrast between maximum white and minimum black on the projected test picture. The larger the ratio the higher the contrast. Better technology provides higher contrast ratios (over 100-to-1).

Digital Light Processing (DLP): See "DLP Technology: How It Works," p. 42.

Keystone Correction: Keystoning occurs when the image at the top of the screen is wider than at the bottom (or visa versa), creating a trapezoidal shape to the display. Since most projectors are not positioned exactly at 90 degrees in relation to the screen, this almost always occurs. Correction—often achieved digitally—compensates for the position of the projector by reshaping the image.

Liquid Crystal Display (LCD): LCD projectors work by varying the electric signal and controlling the opacity of LCD "glass." Each pixel performs like a shutter, adjusting the amount of light allowed to pass through.

Lumen or ANSI Lumen: A lumen is a standard for measuring light output, as determined by ANSI, the American National Standards Institute. The higher the number of lumens, the brighter the screen will seem. For dark rooms and small screens, fewer lumens are needed than on large screens displaying images in daylight.

Metal Halide Lamp: These lamps feature half-lives of more than 700 hours, meaning that at that point the lamp will burn half as brightly as it did when new. Metal halide lamps are an alternative to halogen bulbs, which last about 40 hours and produce an image that is not as white.

Poly Si (Polysilicon) LCD: Used in top-of-the-line projectors, Poly Si features three layers of color—red, green, and blue—which leads to higher contrast ratios and color dynamics.

Resolution: The number of individual dots, or pixels, that a projector uses to display an image. The pixel quantity is described in terms of the number of horizontal pixels and vertical pixels. For instance, XGA (Extended Graphics Array) delivers 1,020 horizontal pixels and 768 vertical pixels, or 1020 x 768. Multiplying these numbers gives you the total display resolution of 783,360 individual pixels. Other common display resolutions are SVGA (Super Video Graphics Display) at 800 x 600; SXGA (Super Extended Graphics Array) at 1280 x 1024; and VGA (Video Graphics Array) at 640 x 480.

Throw: Indicates where the projector should be placed in the room. Long throw lenses work best from the rear of the room while short throw lenses work best from the front of the room.

Ultra-Light Projector: Any projector under ten pounds.

Zoom: A zoom lens allows users to vary the size of the image on the screen without moving the projector. The zoom lens ratio tells you how flexible the unit is. A ratio of 1.4-to-1 means you can increase the size of the image by 1.4 times without moving the projector. The ratio also tells you how far you can move the unit and still maintain the same size image on the screen.

of content and offers unique ways for instructors to interact with it. Students can see writing and drawing on any regular whiteboard with dry-erase markers. Tegrity's patented computer vision automatically captures writing in sync with narration.

Instructors can point inside the projected image on the board using Tegrity's laser InterPointer.

When instructors prefer facing their students more of the time, they can use an LCD tablet or Tablet PC to interact with content and students see writing, pointing (like writing on transparencies), and yellow highlighting.

Contact: ***Tegrity Inc.****, San Jose, Calif.; (800) 411-0579; www.tegrity.com.*

Queuing Devices

Applied Laser

Applied Laser's array of laser pointers work within a range of 300 to 800 yards. The "Ultimate" ink pen and laser pointer points up to 300 yards away and comes with a six-hour battery. The "Super" models can point from as far away as 500 yards.

Contact: ***Applied Laser****, Pasadena, Calif.; (800) 833-4780; www.appliedlaser.com.*

Gyration

Gyration's Ultra Professional Optical Mouse has a 100-foot range with no line-of-sight limitations. Its "in-air" cursor control allows you to control applications from anywhere in the room using simple hand gestures.

The Ultra Professional also works on the desktop and includes GyroTools, special effects software for Windows, which allows users to add dynamic effects to a presentation, and a long-life rechargeable battery with a convenient charging cradle.

Contact: ***Gyration Inc.****, Saratoga, Calif.; (800) 316-5432; www.gyration.com.*

Lasermate

Lasermate Group Inc. manufactures a variety of laser pointers and also supplies laser accessories, including

diffractive optics, diode driver circuit boards, and laser safety goggles.

Contact: ***Lasermate Group Inc.,*** *Pomona, Calif.; (909) 623-4995; www.lasermate.com.*

Wireless Computing

The RF-10 Wireless SurfMouse is designed for computer-based slide shows, interactive training, and presentation programs such as PowerPoint.

It features a 50-foot range, a fingertip-operated mouse touch pad similar to those on notebook computers, and two, side-by-side large mouse buttons for left and right clicks. Radio frequency technology allows use of the mouse without directly aiming it.

Contact: ***Wireless Computing Inc.,*** *Austin, Texas; (512) 858-4400; www.wireless-computing.com.*

Lifts and Mounts

Display Devices

Display Devices' Projector Ceiling Mounts are custom designed for each projector, featuring strong 12-gauge steel and a two-inch cable pipe, which fits a large bundle of cables through easily.

The company also offers an Anti-Theft Mount that uses Tamper-Proof hardware and includes a loud alarm, motion sensing, and relay to a security system.

Contact: ***Display Devices Inc.,*** *Arvada, Colo.; (303) 412-0399; www.displaydevices.com.*

Peerless Industries

The Vector Pro projector mount features a ball and socket design and total integrated Armor Lock Security.

Peerless uses metal-to-metal connections for the highest quality. A variety of screws and connectors are available as needed in particular situations.

Contact: ***Peerless Industries Inc.,*** *Melrose Park, Ill.; (800) 865-2112; www.peerlessindustries.com.*

SVS Lifts

SVS Lifts manufactures patented, motorized ceiling-to-floor lift systems. These are one-person operable for ease of use. At the push of a button the lifts accurately raise and lower projectors, monitors, speakers, and more. The lifts are aesthetically stored above the ceiling for security and automatically positioned for operation. The motors are quiet and provide accurate, level tracking for consistent screen images.

Contact: ***SVS Lifts Inc.,*** *Panama City, Fla.; (850) 522-4739; www.svslifts.com.*

Control Devices

AMX NI Series

The AMX NI series combines the proven technology of the NetLinx Integrated Controller with the NetLinx ME260 Master into a single integrated control system. Three models are available: the NI-2000, NI-3000, and NI-4000.

The NI-2000 is designed to manage the components of a single room, including VCRs, DVDs, projectors, lighting, and thermostats.

The NI-3000 offers twice as many ports and relays as the NI-2000, and can control one large auditorium or a few rooms.

The highest-end model, the NI-4000, features the same number of ports and relays as the NI-3000, with the addition of four NetLinx control card slots.

Contact: ***AMX Corp.,*** *Richardson, Texas; (469) 624-8000; www.amx.com.*

Crestron CNX-DVP4

The Crestron CNX-DVP4 is a digital-video, touchpanel interface, and stand-alone 2-Series control processor that can display up to four, real-time video/computer windows simultaneously on a single, high-resolution monitor, projector, or plasma screen.

Incorporating four DVI-I inputs, the DVP4 has the capability to accept any combination of four, analog RGB computer sources up to 1600 x 1200 resolution, or four DVI digital-visual interface digital computer sources up to 1280 x 1024 resolution.

Multiple video formats can be processed through the eight BNC inputs on the DVP4. Any combination of composite NTSC/PAL or S-Video (Y/C) sources can be fed to the unit simultaneously.

DVP4 also features seamless switching and incorporates digital transition effects, such as fades, reveals, and pans.

Each video window can be scaled and positioned in a virtually unlimited configuration. Graphics can be incorporated in the foreground or background in combination with the windows, and with built-in, alpha-channel support, corporate icons and dynamic text can be placed over the video windows in a translucent format.

Contact: ***Crestron Electronics Inc.,*** *Rockleigh, N.J.; (800) 237-2041; www. crestron.com.*

Extron IPL T S2

The Extron IPL T S2 is a compact Ethernet-to-Serial Interface with integral Web server. Extron's IP (Internet Protocol) Link technology enables serially controlled products (RS-232, RS-422, RS-485) to be connected to Ethernet networks and controlled or monitored remotely.

IP connectivitiy allows users to remotely monitor and troubleshoot projectors, plasma displays, switchers, and other serially controlled products at any time, from any computer connected to a local area network (LAN), wide area network (WAN), or the Internet.

The IPL T S2 also sends failure and service messages to any e-mail address automatically. This allows administrators or technicians to quickly respond and correct technical problems, limiting down time.

Also included is 1.25MB of flash memory for storing HTML files, JavaScripts, animation, and graphics.

Contact: ***Extron Electronics,*** *Anaheim, Calif.; (714) 491-1517; www.extron.com.*

EDUCATOR'S REVIEW ■ BY JOSEPH BOUDREAUX, UNIVERSITY OF ARIZONA

Director MX: Workflow Simplifies a Busy Set

Macromedia Director has had an undeserved reputation for being hard to learn. On the University of Arizona campus, its younger sibling Flash had upstaged the multimedia development software to the point that I had to deny rumors of its demise. But with the release of Director MX in December 2002, it has made a strong comeback, being more powerful and easier to learn.

The new powers of Director MX include enhanced interactivity via a feature called "Behaviors," dynamically connecting to a database server via the XML standard, or talking directly to ColdFusion servers. But it is the new workflow that is paramount. Director MX can re-purpose materials already created for courseware. Word documents, audio, video, and images can be imported into a "Cast" window where everything can be seen at a glance. Director MX also imports PowerPoint, GIFs, and new file formats like Flash MX.

A new context-sensitive "Property Inspector" feature improves Director MX's workflow for importing or creating media, sequencing, and laying out media elements in a timeline. It also adds interactivity with simple or complex lingo scripts, and eliminates opening and closing multiple panels and windows. Central to the new ease-of-learning, the Property Inspector is a true smart widget, as it can always be on-screen reminding the developer of settings, what to do, or better yet, what can be done.

In authoring mode, selecting a graphic or text element instance with "Stage" or setting the timeline for the element with the "Score" feature lets users view and change the characteristics of the instance. For example, in establishing an element instance, Flash MX shows properties like scale and viewscale. Digital video Cast Member instances display framerate, cue points, duration, and more. Make a change to an instance via the Property Inspector and you can see it ripple and update in other open windows. Magic.

This improved workflow will seem familiar to Dreamweaver MX and Flash MX users because the programs share common interface elements like the Property Inspector. Interactivity is Director MX's strength, and it's integrated with relative ease via the drag-and-drop Behaviors feature: pre-done chunks of code and functionality to introduce sophisticated interactivity without the necessity of programming. Director MX will seem like PowerPoint on steroids for the newbie who can use Behaviors to create custom buttons, pull-down menus, slider interactions, simulations, or navigation without learning programming.

Yet programmers can script more sophisticated interactivity with Lingo, the built-in programming language. New Lingo users trying to remember what the exact syntax is of "if-then-else-maybe" logic incantations will appreciate the Scripting and Behavior Inspector's "fill-in-the-blank" capability. Seasoned programmers will appreciate the extensive math functions and property methods that can be accessed via organized menu groupings that are never more than two deep.

Flash MX comes with educational templates and interaction types such as True or False, Fill in the Blank, and Multiple Choice. Academic users of Director MX can import and use these, if they buy and learn both programs. Unlike Flash MX, you need both a PC and Mac version of Director MX to author cross-platform applications.

Director MX has several well-designed, new publishing options: an executable or a .dcr file to run in a target browser and plug-in version. You can also target specific Browser and plug-in versions with a Detect Shockwave option. The feature writes the HTML for you, along with JavaScript and VBScript to detect the Shockwave plug-in or ActiveX control.

You will want both. The best of both worlds is both. But if I were forced to choose between these programs [Director MX and Flash MX], my choice would be the more powerful Director MX.

Director MX and Flash MX are two overlapping halves of the same program. Each has different unique additional capabilities. Only Director has a true 3D engine, rich media control, and EXACT sync for sound. Flash MX has easier-to-work-with vector drawing tools. But you need both. You will want both. The best of both worlds is both. But if I were forced to choose between these programs, my choice would be the more powerful Director MX. That's because it is now easier to quickly create or prototype interactive multimedia simulations, courseware, simple slide show presentations, and instructional games.

Joseph Boudreaux (josephb@u.arizona.edu) is a senior support systems analyst at the University of Arizona's Multimedia Learning Lab.

DECEMBER 8-10

PLAN TO PRESENT AT THE SYLLABUS FALL2003 CONFERENCE

Syllabus 2003

CALL FOR PAPERS

5th annual Boston-area education technology conference

Cambridge, Mass. – New England's home of higher education

The Syllabus fall2003 Conference

Returning for its 5th year in the Boston area, the Syllabus fall2003 conference will be held at the Hyatt Regency Cambridge. The venue offers easy access to downtown Boston and is in close proximity to MIT, Harvard, and the famous Charles River.

Syllabus fall2003 will feature informative sessions relevant to technology for teaching and administration in higher education institutions. College-level faculty, department chairs, administrators, and IT directors will want to participate. The conference will provide a setting for exploring technologies in context along with a collegial atmosphere for exchanging strategies and best practices with peers.

The three-day event will incorporate a range of session types, from in-depth skill development workshops to highly strategic panel discussions and visionary keynotes. Breakout sessions will be offered in five timely conference tracks. In view of the large response to last year's Call for Papers, prompt submission of session proposals is encouraged.

Conference Content - Tracks

In five defined tracks, we examine the central themes and key technologies that have become increasingly critical to informed decision makers and faculty in higher education. For more detail regarding each conference track see our online call for speakers at **www.syllabus.com/fall2003/cfs.asp.**

Track 1 – New Technologies and Trends

From handheld computers to tablet PCs, ePortfolios, and new high-tech tools for instruction, this track samples the new and emerging technologies and applications that are sure to make a difference in the development and delivery of education.

Track 2 – Interactive Media

Today's interactive media allow educators the flexibility to offer new modes of teaching and collaborative learning. This track examines how these technologies are being used in the classroom, the lab, and for distance education, and features the enabling technologies and standards like SMIL and XML that help to make it all possible.

Track 3 – IT Implementation and Support

Evaluation and support strategies are central to the success of ePortfolio initiatives, distance learning programs, and other implementations of technology on campus. This track shows what institutions are doing to support faculty development, evaluate technology programs, provide help desk services, and offer resources for technology integration.

Track 4 – Strategic Planning / Administrative Issues

Strategic planning may involve a myriad of challenges, from infrastructure issues, to accreditation of distance learning programs, to section 508 compliance. Concerns may include how to determine return on technology investment, or how to leverage technology to benefit large non-major sections.

Track 5 – Teaching with Technology

This track offers a faculty view of the intersection of technology and pedagogy. Join colleagues as they present case studies in their disciplines and explore relevant topics, including instructional design standards, academic integrity, technology and student learning, and more.

1.800.280.6218 | WWW.SYLLABUS.COM | **There's still time to propose a session!** Proposal deadline: Monday, June 30, 2003

HOW TO SUBMIT A PROPOSAL

Interested parties are invited to submit proposals via e-mail per the following instructions. All relevant proposals will be considered, so if you have a compelling education technology topic related to the outlined content tracks, please feel free to submit a proposal.

Syllabus is now accepting proposals for the following session types:

Full- and Half-Day Workshops (3-6 hours)

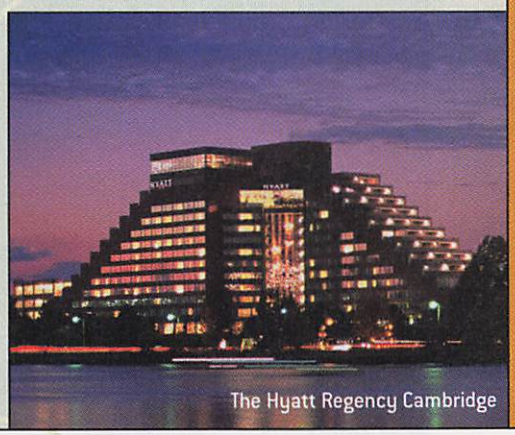
Classroom style, in-depth workshops that explore the hows and whys of technology implementation along the subject lines of the tracks indicated above.

Breakout Sessions (1-2 hours)
Shorter classroom presentations that introduce a technology, program, or pedagogical strategy as well as the issues and benefits of implementation in the higher education environment. Based on the tracks indicated above.

Panel Sessions (1-2 hours)
Plenary sessions with a group of speakers and a moderator brought together for a discussion or debate of topics selected from the conference tracks.

Technology Application Case Studies
(1 – 2 hours)
These sessions are focused on practical case studies of technology applications and integration in higher education. This is an opportunity for all those involved in IT implementation and operations—faculty, administrators, and technologists—to share their experiences with implementation teams from other campuses. These sessions should be issues/results-focused.

Poster Sessions
A detailed look at graphic presentations and papers posted in designated areas. Poster presenters will be on-hand for informal discussion at designated session times.



The Hyatt Regency Cambridge

Submission Guidelines

Submissions should include the following information:

I. The title of the presentation

II. The proposed format, e.g., breakout session (see session types, above)

III. An abstract of the presentation content (600 words or less)

IV. An indication of the conference track(s) into which your topic would most likely fall

V. A brief session description suitable for publication (one 75-word paragraph)

VI. Name and academic title (e.g., Ph.D. or Ed.D.) for each presenter

VII. E-mail address and phone number for each presenter

VIII. Presenter bio(s) suitable for publication (one 75-word paragraph each — be sure to include current position and affiliation)

IX. Any further information that might be helpful in determining the relevance of your topic to the conference

The final date for submissions is Monday, June 30, 2003. Notification of acceptance will be made by Friday, July 11, 2003. Proposals will only be accepted electronically through the following submission process:

SUBMIT YOUR PROPOSAL BY E-MAIL:

syllabusconferences@101com.com

Please include the following in the subject line (where "lastname" is the presenter's last name):
Syllabus fall2003 – lastname

Speaker Discount: Presenters whose proposals have been accepted for speaking are entitled to receive a "speaker" discount.

Note: As a condition of acceptance, each presenter will be required to submit, by Friday, November 7, 2003, a 1,000- to 1,500-word article for consideration for publication in the conference proceedings, on the Syllabus Web site, or in Syllabus magazine.

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Trends, *continued from page 12*

came from these locations, their influence grew. But the reason a network address finds its way onto such a black list isn't always that it's from a source of spam.

The real problem is getting an address that isn't from a source of spam off the list. If a spammer managed to grab some accounts from an ISP that was otherwise a good citizen and send out thousands of spam messages through it, the ISP would become a candidate for the RBL. All the users of that ISP could quickly find their e-mail now rejected by others.

The real problem is that control is now exercised "elsewhere." The bottom line is the person controlling access to your inbox should be you. Attempts to externalize this, though sophisticated in design and altruistic in spirit, reduce your control of information coming and going to you. As long as you can look at the filtered list of spam and decide, even if it's in one keystroke, that yes, this is indeed garbage, you're making the decision for yourself. This isn't a responsibility to cede to others.

Legislation

In the body politic the ultimate reaction to a threat is to make a law against that which the majority believes enhances their well-being, safety, or protection. State and federal legislators have jumped in with a growing list of anti-spam bills. Consider the "CAN–SPAM Act of 2003," introduced by Senators Burns, Wyden, Stevens, Breaux, Thomas, Landrieu, and Schumer, "to regulate interstate commerce by imposing limitations and penalties on the transmission of unsolicited commercial electronic mail via the Internet."

Not to be out done, Congresswoman Zoe Lofgren (D-CA) announced April 28 the "Restrict and Eliminate Delivery of Unsolicited Commercial E-mail (REDUCE) Spam Act." This Act requires that bulk unsolicited commercial e-mail incorporate in the subject line the tag [ADV:] to clearly distinguish it as advertising. But Congresswoman Lofgren raised the bar with an intriguing twist. The bill establishes a bounty for the first person to track down a spammer who violates the labeling or opt-out requirements.

Larry Lessig, the Stanford law professor who recently argued the *Eldred v. Ashcroft* case before the U.S. Supreme Court, has publicly committed to resigning from his position at the Stanford Law School if a spam bounty law is enacted and it doesn't practically reduce the amount of spam clogging the veins of the Internet (see: http://cyberlaw.stanford.edu/lessig/blog/archives/2003_01.shtml#000787).

I'm skeptical that legislative remedies can be of much help, and I certainly don't want to see Larry lose his job, even if I'm wrong and Lofgren's legislation works. Rather, I'm putting my money on the increasing sophistication of locally implemented content filtering tools. The collective creativity of technologists, both in the open source and commercial communities, is formidable. There are some very good tools already on the market. As an example, consider Spamnet by Cloudmark. Spamnet leverages the power of the user community while leaving the ultimate decision of what is or is not spam for you to decide by routing all messages flagged as spam to your individual spam folder. The algorithms for identifying spam involve sophisticated message fingerprinting that is augmented by the Spamnet user community's own contributions ranked by confidence in the member submitting the message for consideration as spam (see "Content Scanners" on p. 10).

Protect yourself from spam, but stay in control of the process—don't get seduced by tools that use RBLs. It's your e-mail, including the decision as to what is and is not spam!

[***Editor's note: Phil Long will moderate a panel on innovative learning spaces on Mon., July 28, at Syllabus2003.***]

Phil Long, Ph.D. (longpd@mindspring.com) *is senior strategist for the Academic Computing Enterprise at MIT. He is also a senior associate for the TLT Group of the AAHE.*

Reflections, *continued from page 50*

How, then, do we get the great online multimedia curriculum courseware built that today's students expect and that we know is an essential part of their education? In a few cases we should have a team of IT professionals build it. This will result in a very expensive product of exceptional quality. We need some instances of this level of sophistication on our campuses, but we also need to understand that we can't afford to do this for all the courses we offer.

Faculty can build basic Web pages themselves with something as simple as Word, if they really know how to use it. While there is other software that can build parts of Web pages much easier than Word, there is an enormous advantage in having faculty build Web pages using software they already use.

Any good courseware requires simulations, but these are far beyond the capability of faculty—even many IT groups—to build themselves. We need a large library of simulations using a common Application Program Interface (API) that can be customized and inserted into Web pages. For a faculty member, adding a simulation must be no more difficult than looking up its description in an online catalog on the Web, opening the Web page that is being built with Word, selecting the *Insert* menu and choosing *Insert Simulation*, filling in some parameters or checking some boxes, and clicking OK.

No one university could build such a Multidisciplinary Educational Simulation Archive (MESA), and no commercial entity would find doing so profitable. But a consortium of universities could do this and they should. Then faculty could build great online material without even thinking about HTML. And my dog could quit writing HTML and go back to chasing cars.

[***Editor's note: Howard Strauss will moderate a panel on disruptive technologies on Wed., July 30, at Syllabus2003.***]

Howard Strauss (howard@princeton.edu) *is the manager of technology strategy and outreach at Princeton University.*

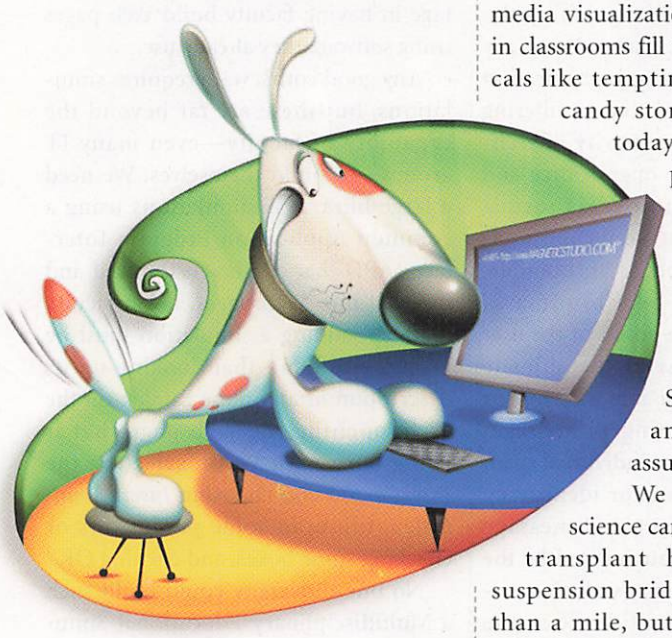
Howard Strauss

REFLECTIONS

ANOTHER LOOK AT EDUCATION TECHNOLOGY

My Dog Knows HTML—Should Your Faculty?

If Benjamin Franklin were to appear here today he would be totally baffled by a hospital operating room, an airport, and people using cell phones. But if he walked into most university classrooms and saw a professor at the front of the room scribbling on a blackboard, he'd recognize immediately what was going on. In fact, he could likely just pick up the chalk and continue lecturing.



While the last century has seen the complete transformation of medicine, transportation, and communications, education has hardly changed at all in the last *three* centuries. With the availability of affordable personal computers of incredible power interconnected via high-speed—often wireless—networks, it appears that we now have the power and the right tools to transform higher education. In fact, many experts in the field consider this transformation so significant that they refer to it as the onset of "the information age."

Examples of the power of multimedia visualizations and simulations in classrooms fill the pages of periodicals like tempting confections in a candy store window. But can today's software make it possible for faculty who still struggle with e-mail attachments to build such high-quality online educational materials themselves? Software vendors and many IT folks assure us that they can.

We know that modern science can get us to the moon, transplant hearts, and build suspension bridges that span more than a mile, but we don't ask individual faculty to perform these feats. Multimedia visualizations and simulations don't rise to that level of complexity, yet they still remain quite a challenge even for the most skilled team of IT developers.

"My six-year-old uses Dreamweaver," we hear. "If my dog had opposable thumbs," we are told, "he could write in HTML." At a university such as Princeton, where Nobel Prize winners abound, surely faculty would find it a trivial task to build an online course in economics. But they don't—because the available software is too quirky and the learning curves far too steep.

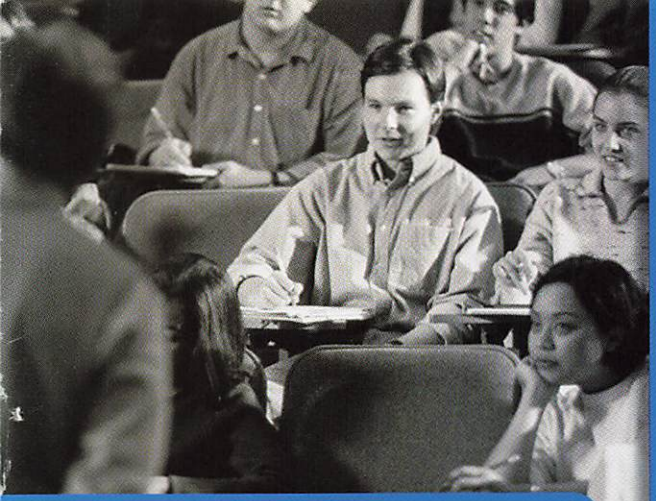
There is little doubt that almost any faculty member at any college or university could learn HTML, Dreamweaver, Flash, FrontPage, Vegas Video, Photoshop, or even JavaScript. And they could master online design, graphics and multimedia design, pedagogical principles for effective online learning, communications infrastructure, database design, content management, online accessibility principles, the Digital Millennium Copyright Act, and a few other specialized bits of knowledge they'll need to build effective, online courseware.

Recently, one of our Pulitzer Prize-winning faculty members sent his first e-mail attachment after three tries, three phone calls, and more than an hour of coaching. Even after this portentous start, he could probably learn Dreamweaver and build his own Web pages, but it would take him away from the next piece he's writing. Building a Web page is not a difficult task for an IT professional, but it is an unnecessary diversion of time and effort for most faculty members. Worse yet, Web pages built by professionals will be orders of magnitude better than the attempts by even the most determined faculty.

Of course, faculty need to understand some basic information technology. They need to be able to use e-mail, a text processing program, a course management system, and basic presentation software. They also must be able to browse and search the Web. Anything beyond that, however, is so specialized that only faculty with a compelling interest in some facet of IT should be expected to master it.

continued on page 49

Illustrated by Peter Lacalamita



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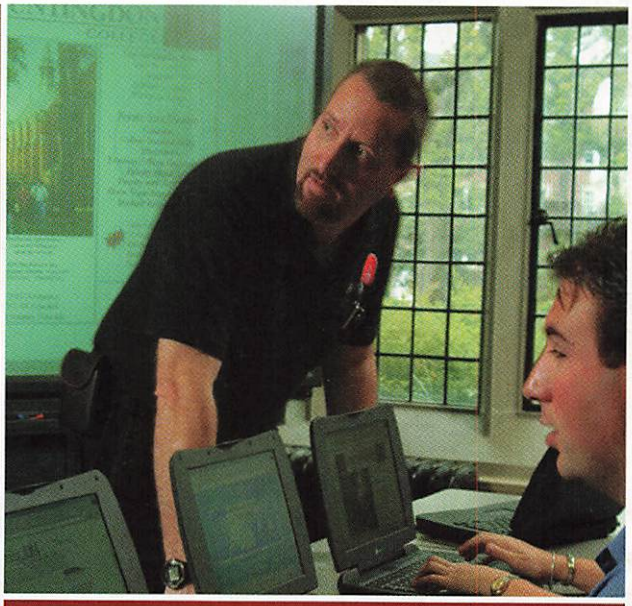

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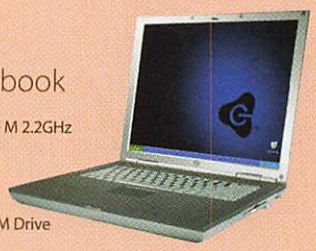

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